United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with West Virginia Agricultural and Forestry Experiment Station and West Virginia Conservation Agency

Soil Survey of Logan and Mingo Counties, West Virginia

How To Use This Soil Survey

General Soil Map

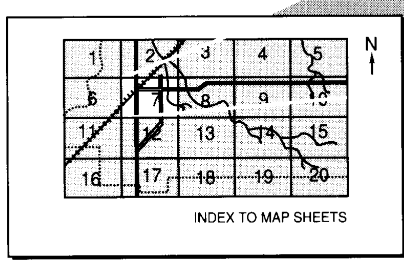
The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

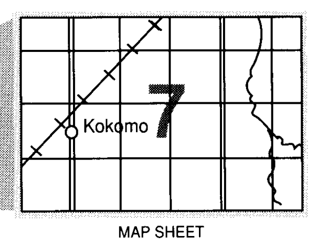
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

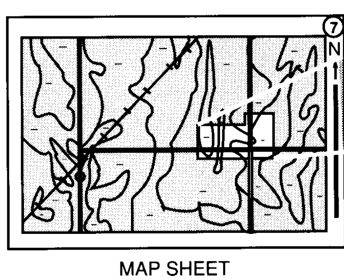
The detailed soil maps can be useful in planning the use and management of small areas.

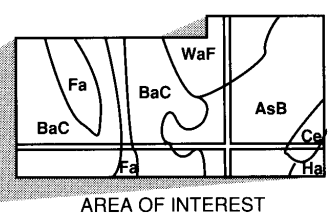
To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.





Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.





NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2003. This survey was made cooperatively by the Natural Resources Conservation Service, the West Virginia Agricultural and Forestry Experiment Station, and the West Virginia Conservation Agency. The survey is part of the technical assistance furnished to the Guyan Conservation District.

Cover: Williamson, West Virginia, along Tug Fork in Mingo County. Udorthents-Urban land complex, 0 to 8 percent slopes, is in the foreground; Highsplint-Urban land complex, 15 to 35 percent slopes, very stony, is on the footslopes; and Matewan-Highsplint-Guyandotte association, very steep, extremely stony, is in the background. Note the floodwall that protects Williamson from rare episodes of flooding.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued September 2008

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Kevin Wickey
State Conservationist
Natural Resources Conservation Service

Soil Survey of Logan and Mingo Counties, West Virginia

By Robert N. Pate, United States Department of Agriculture, Natural Resources Conservation Service

Fieldwork by Robert N. Pate, United States Department of Agriculture, Natural Resources Conservation Service, and Katherine E. McBride, West Virginia Conservation Agency

United States Department of Agriculture,
Natural Resources Conservation Service,
in cooperation with
the West Virginia Agricultural and Forestry Experiment Station and the West Virginia Conservation Agency

LOGAN AND MINGO COUNTIES are in the southwestern part of West Virginia (fig. 1). The survey area has a total area of about 879 square miles, or about 562,800 acres. About 2,555 acres in the survey area is covered by water.

This soil survey updates the survey of Logan and Mingo Counties, West Virginia, published in 1915 (Latimer 1915). It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the Survey Area

This section provides information about some of the natural and cultural factors that affect land use in the survey area.

Settlement and Population

Various Native American tribes made the survey area their home long before European immigrants became settlers. The Mingo, Shawnee, Cherokee, and Delaware were the main tribes that lived, hunted, and set up villages in what is now Logan and Mingo Counties. The first European settler in Logan County was James Workman, who settled on an island in

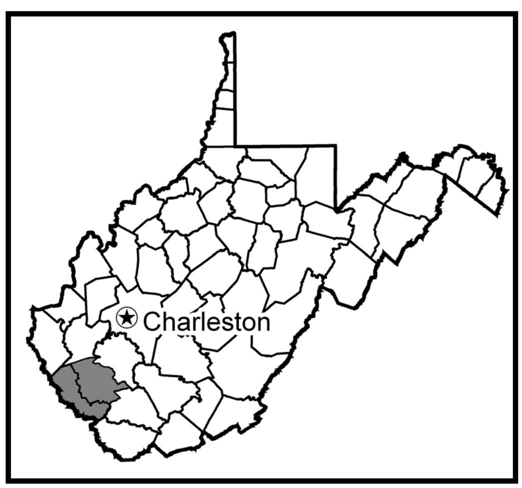


Figure 1.—Location of Logan and Mingo Counties in West Virginia.

the middle of the Guyandotte River in the spring of 1794 (Swain 1927). In 1799, Anthony Lawson established a trading post named Lawsonville, which was at the present location of Logan. In 1824, Logan County was established, and in 1827, the town of Lawsonville became the county seat. On March 10, 1884, the town's name was changed to Aracoma, in honor of Shawnee Chief Cornstalk's daughter, who is buried on the adjacent island. In 1907, the name of the town was changed to Logan, after Chief Logan, Chief of the Mingo Indian tribe.

Mingo County was established on January 30, 1895, and is the youngest county in West Virginia. The first European settlers were the Taylor's and Starrs', who settled in the area around 1786 (Smith 1960). Mingo County was named after the Mingo tribe (Cobb 1921).

Noteworthy historical events that happened in Logan and Mingo Counties include the Hatfield-McCoy Feud from 1882 to 1888; the Matewan Massacre, on May 19, 1920; and the Battle of Blair Mountain in 1921. The survey area also includes the burial place of "Devil Anse" Hatfield (fig. 2).

In 2000, the population of Logan County was 37,710 and that of Logan, the county seat, was 1,630. Chapmanville, Man, Mitchell Heights, and West Logan are the only other incorporated communities in Logan County.

In 2000, the population of Mingo County was 28,253 and that of Williamson, the county seat, was 3,414. Delbarton, Gilbert, Kermit, and Matewan are the only other incorporated communities in Mingo County.

Farming

In 2002, there were 21 farms in Logan County and 35 in Mingo County. Since 1997, the total number of farms has increased by 10 in Logan County and 5 in Mingo County (USDA NASS n.d.; USDA NASS 1999). This increase may be the result of reclaimed areas of mountaintop removal coal mines being used as pasture.

The main type of farming is raising beef or dairy cattle, in conjunction with the production of hay and pasture. Farms are operated on a part-time basis.

Transportation and Industry

The transportation needs of Logan County are served by U.S. Highway 119, State Routes 10, 44, 80, and 17, and numerous county routes. Many railroad spurs serve the coal industry throughout Logan County.

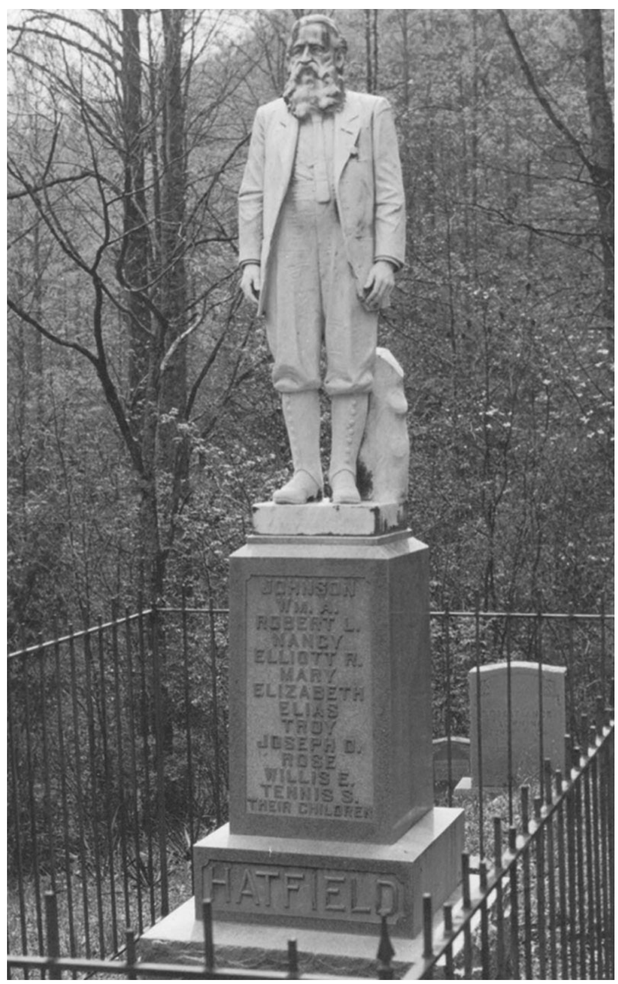


Figure 2.—Tombstone of "Devil Anse" Hatfield.

The transportation needs of Mingo County are served by U.S. Highways 119 and 52, State Route 65, and numerous county routes. Many railroad spurs serve the coal industry throughout Mingo County.

The main industries in the survey area are coal mining, timber and sawmill operations, gas production, and tourism.

Geology

Jeff McClure, state geologist, Natural Resources Conservation Service, helped to prepare this section.

Most of the soils in Logan and Mingo Counties formed in material weathered from bedrock of the Kanawha Formation, which is part of the Pottsville Group (Hennen and Reger 1914). In several small areas, the Guyandotte and Tug Fork Rivers have eroded deeply over structural highs and the New River Formation, also of the Pottsville Group, is exposed. In the central and northwestern parts of the survey area, high ridges over structurally low areas are capped by soils weathered from the Allegheny and Conemaugh Formations.

These Pennsylvanian-age rocks are considered to be between approximately 290 and 320 million years old. The bedrock consists of interbedded sandstone, siltstone, shale, and coal. Many of the coals have been extensively surface mined or deep mined in the survey area. Because of the low sulfur content, these coal seams are environmentally attractive. The largest reserves have been mined from the No. 5 Block, Coalburg, Peerless and No. 2 Gas (locally known as Upper and Lower Cedar Grove or Campbell Creek), and Powellton (locally known as Alma) seams.

Berks, Matewan, Highsplint, Guyandotte, and Pineville soils formed in material weathered from the Pennsylvanian-age rocks. Fiveblock soils formed in material disturbed during the recent surface mining of coal.

Soils along the Guyandotte River, Tug Fork, Pigeon Creek, and other smaller streams formed in Quaternary alluvium of recent deposition.

Relief and Drainage

Logan and Mingo Counties lie entirely within the Cumberland Plateau and Mountains Major Land Resource Area (MLRA). This MLRA is dominated by very steep, rugged side slopes, which are broken by strongly sloping to steep ridgetops and very narrow bottoms along streams. Areas on the bottom land are the only suitable building sites in the survey area, and most of the population is crowded into these areas. The wider bottoms along the Guyandotte River in Logan County are protected from flooding by R.D. Bailey Dam. They have been extensively developed for urban uses. The bottoms along Tug Fork in Mingo County are not protected from flooding and have not been as extensively developed for urban uses.

The Guyandotte River is the dominant drainage system. It flows through the northeastern corner of Mingo County, then northwesterly through the center of Logan County. In Mingo County, the main drainage system is Pigeon Creek, which flows northwesterly and drains into Tug Fork. Within the survey area, Tug Fork separates the States of Kentucky and Virginia from the State of West Virginia.

The elevation in Logan County ranges from 2,873 feet at the highest point, which is an unnamed knob at the eastern point of Logan County where it joins Boone and Wyoming Counties, to 590 feet where the Guyandotte River flows northward into Lincoln County.

The elevation in Mingo County ranges from 2,524 feet at the highest point, which is Horsepen Mountain on the Logan County line, to 580 feet in an area where Tug Fork flows northward into Wayne County.

Climate

Prepared by the Natural Resources Conservation Service, National Water and Climate Center, in Portland, Oregon.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Logan in the period 1971 to 2000. Some of the long-term data on temperature and precipitation were recorded at Williamson in the period 1926 to 1993. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. Statistics about thunderstorms, relative humidity, percent of sunshine, and wind were estimated from data gathered at Charleston, West Virginia.

In winter, the average temperature at Logan is 37.1 degrees F and the average daily minimum temperature is 27.5 degrees. The lowest temperature on record, which occurred on January 22, 1985, is -18 degrees. In summer, the average temperature is 74.9 degrees and the average daily maximum temperature is 85.9 degrees. The highest recorded temperature, which occurred on August 18, 1988, is 107 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 46.97 inches at Logan and varies from 44 to 48 inches throughout the survey area. Of this, about 29 inches, or nearly 62 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.02 inches at Logan on August 14, 1976, and 4.62 inches at Williamson on August 2, 1945. Thunderstorms occur on about 44 days each year, and most occur between April and August.

The average seasonal snowfall is about 17.5 inches. The greatest snow depth at any one time during the period of record was 20 inches at Logan on January 9, 1996. The heaviest 1-day snowfall on record was 18 inches at Logan on February 13, 1985. On the average, 12 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 45 percent in April and about 60 percent in July. Humidity is higher at night, and the average at dawn is about 75 percent in the winter and early spring and about 90 percent in the summer and early fall. The sun shines about 60 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 8 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Areas of the general soil map join with areas of the general soil maps for Wayne, Lincoln, Boone, Wyoming, and McDowell Counties, West Virginia; Martin and Pike Counties, Kentucky; and Buchanan County, Virginia. Differences in map unit names and proportions of component soils are the result of the scale of mapping and the degree of generalization.

1. Matewan-Highsplint-Guyandotte

Very steep, moderately deep and very deep, well drained soils that formed in residuum and colluvium derived from sandstone; on mountain uplands

This map unit is in the central part of the survey area. It consists of very steep soils on narrow ridgetops and on side slopes (fig. 3). The soils formed in colluvium are in coves, on footslopes above drainageways, and on the side slopes, adjacent to the soils formed in residuum. The rugged landscape has been dissected by many small, steep, erosional drainageways. Slopes range from 35 to 80 percent.

This map unit makes up about 80 percent of the survey area. It is about 30 percent Matewan soils, 26 percent Highsplint soils, 17 percent Guyandotte soils, and 27 percent minor components. Of minor extent in this map unit are Fiveblock soils in surface-mined areas, Berks and Lily soils on ridgetops and shoulders, areas of rock outcrop, and small areas where 15 to 50 percent of the surface is covered by stones or boulders.

The very steep Matewan soils are on ridgetops and shoulders. They are moderately deep and are moderately coarse textured. They have a very dark grayish brown surface layer and a yellowish brown and brownish yellow subsoil. These soils formed in acid material derived from sandstone.

The moderately steep to very steep Highsplint soils are on the lower side slopes, on footslopes, and in south-facing coves. They are very deep and are medium textured. They have a very dark grayish brown surface layer and a yellowish brown and strong brown subsoil. These soils formed in colluvium.

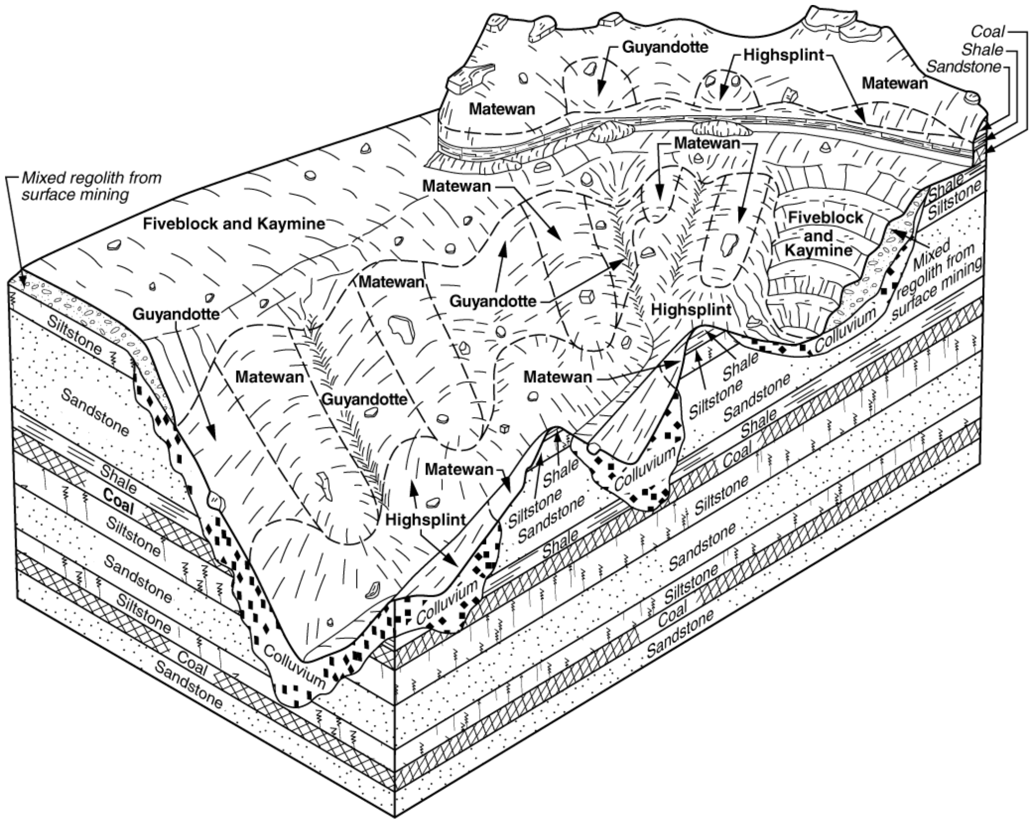


Figure 3.—Typical relationship of the soils and the underlying parent material in the Matewan-Highsplint-Guyandotte general soil map unit. Surface coal mining is in scattered areas throughout the map unit. The terraced area on the right of the diagram illustrates a valley fill, which is a common method of disposal and reclamation of overburden from coal mining activities. The flat area on the left illustrates mountaintop removal.

The very steep Guyandotte soils are on north-facing side slopes and in coves. They are very deep and are medium textured. They have a black and very dark grayish brown surface layer and a dark yellowish brown and yellowish brown subsoil. These soils formed in colluvium.

Nearly all of the acreage in this map unit is used as woodland. The remaining acreage has been developed for urban uses. It is along the main rivers and their tributaries.

Slope, depth to bedrock, and a poor filtering capacity are limitations affecting most types of urban development.

2. Matewan-Pineville-Guyandotte

Very steep, moderately deep and very deep, well drained soils that formed in residuum and colluvium derived from sandstone; on mountain uplands

This map unit is in areas adjacent to Wayne and Lincoln Counties in the northwestern part of the survey area and adjacent to Boone and Wyoming Counties in the southeastern part. It consists of very steep soils on narrow ridgetops and on side slopes (fig. 4). The soils formed in colluvium are in coves, on footslopes above drainageways, and on the side slopes, adjacent to the soils formed in residuum. The

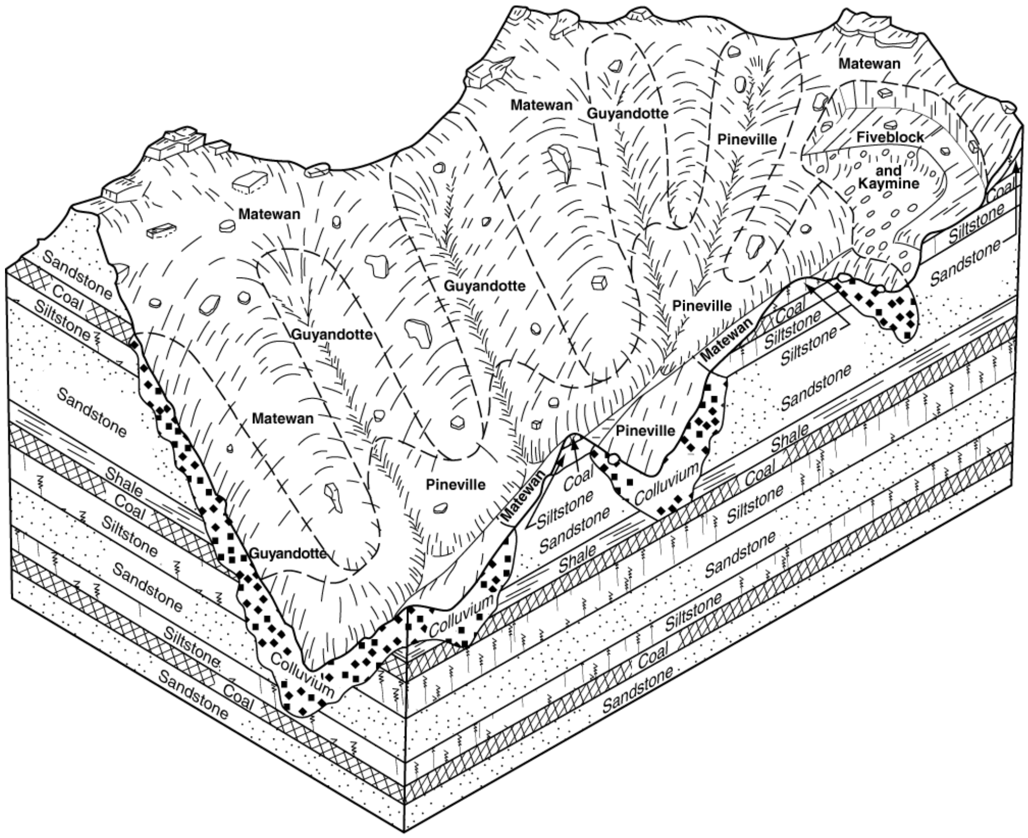


Figure 4.—Typical relationship of the soils and the underlying parent material in the Matewan-Pineville-Guyandotte general soil map unit.

rugged landscape has been dissected by many small, steep, erosional drainageways. Slopes range from 35 to 80 percent.

This map unit makes up about 10 percent of the survey area. It is about 35 percent Matewan soils, 25 percent Pineville soils, 20 percent Guyandotte soils, and 20 percent minor components. Of minor extent in this map unit are Fiveblock soils in surface-mined areas, Berks and Lily soils on ridgetops and shoulders, areas of rock outcrop, and small areas where 15 to 50 percent of the surface is covered by stones or boulders.

The very steep Matewan soils are on ridgetops and shoulders. They are moderately deep and are moderately coarse textured. They have a very dark grayish brown surface layer and a yellowish brown and brownish yellow subsoil. These soils formed in acid material derived from sandstone.

The very steep Pineville soils are on lower side slopes, on footslopes, and in south-facing coves. They are very deep and are medium textured. They have a dark brown surface layer and a yellowish brown and brownish yellow subsoil. These soils formed in colluvium.

The very steep Guyandotte soils are on north-facing side slopes and in coves. They are very deep and are medium textured. They have a black and very dark grayish brown surface layer and a dark yellowish brown and yellowish brown subsoil. These soils formed in colluvium.

Nearly all of the acreage in this map unit is used as woodland. The remaining acreage has been developed for urban uses. It is along the main tributaries.

Slope, depth to bedrock, and a poor filtering capacity are limitations affecting most types of urban development.

3. Pineville-Berks

Very steep, moderately deep and very deep, well drained soils that formed in residuum and colluvium derived from sandstone and siltstone; on mountain uplands

This map unit is in areas adjacent to McDowell and Wyoming Counties in the southeastern part of Mingo County. It consists of very steep soils on narrow ridgetops and on side slopes. The soils formed in colluvium are in coves, on footslopes above drainageways, and on the side slopes, adjacent to the soils formed in residuum. The rugged landscape has been dissected by many small, steep, erosional drainageways. Slopes range from 35 to 80 percent.

This map unit makes up about 4 percent of the survey area. It is about 38 percent Pineville soils, 34 percent Berks soils, and 28 percent minor soils. Of minor extent in this map unit are Fiveblock soils in surface-mined areas; Matewan and Lily soils on ridgetops and shoulders; Highsplint and Guyandotte soils, which formed in colluvium; areas where 15 percent of the surface is covered by stones or boulders; and areas where soils are less than 20 inches deep over bedrock.

The very steep Pineville soils are on the lower side slopes, on footslopes, and in coves. They are very deep and are medium textured. They have a dark brown surface layer and a yellowish brown and brownish yellow subsoil. These soils formed in colluvium.

The very steep Berks soils are on ridgetops and shoulders. They are moderately deep and are medium textured. They have a brown surface layer and a yellowish brown and strong brown subsoil. These soils formed in material derived from siltstone.

Nearly all of the acreage in this map unit is used as woodland. The remaining acreage has been developed for urban uses. It is along the main tributaries.

Slope, depth to bedrock, and a poor filtering capacity are limitations affecting most types of urban development.

4. Berks-Shelocta

Very steep, moderately deep and very deep, well drained soils that formed in residuum and colluvium derived from siltstone, shale, and sandstone; on mountain uplands

This map unit is in areas adjacent to Boone County in the northern part of the survey area. It consists of very steep soils on narrow ridgetops and on side slopes. The soils formed in colluvium are in coves, on footslopes above drainageways, and on the side slopes, adjacent to the soils formed in residuum. The rugged landscape has been dissected by many small, steep, erosional drainageways. Slopes range from 35 to 70 percent.

This map unit makes up less than 1 percent of the survey area, but it is significant because it joins extensive areas of the same general soil map unit in adjacent Boone County. It is about 40 percent Berks soils, 35 percent Shelocta soils, and 25 percent minor soils. Of minor extent in this map unit are Fiveblock soils in surfaced-mined areas, Matewan and Lily soils on ridgetops and shoulders, Highsplint and Guyandotte soils in colluvial areas, areas where 15 percent of the surface is covered by stones or boulders, and areas where soils are less than 20 inches deep over bedrock.

The very steep Berks soils are on ridgetops and shoulders. They are moderately deep and are medium textured. They have a brown surface layer and a yellowish brown and strong brown subsoil. These soils formed in material derived from siltstone.

The very steep Shelocta soils are on lower side slopes, on footslopes, and in coves. They are very deep and medium textured. They have a brown surface layer and a yellowish brown, strong brown, brown, and dark yellowish brown subsoil. These soils formed in colluvium.

Nearly all of the acreage in this map unit is used as woodland. Slope and depth to bedrock are limitations affecting most types of urban development.

5. Highsplint-Matewan-Cloverlick

Very steep, moderately deep and very deep, well drained soils that formed in residuum and colluvium derived from sandstone; on mountain uplands

This map unit is in areas adjacent to Lincoln County in the northern part of the survey area. It consists of very steep soils on narrow ridgetops and on side slopes. The soils formed in colluvium are in coves, on footslopes above drainageways, and on the side slopes, adjacent to the soils formed in residuum. The rugged landscape has been dissected by many small, steep, erosional drainageways. Slopes range from 35 to 80 percent.

This map unit makes up about 2 percent of the survey area. It is about 34 percent Highsplint soils, 24 percent Matewan soils, 15 percent Cloverlick soils, and 27 percent minor components. Of minor extent in this map unit are Fiveblock soils in surface-mined areas, Berks and Lily soils on ridgetops and shoulders, Guyandotte soils in north-facing coves, areas of rock outcrop, and small areas where 15 to 50 percent of the surface is covered by stones or boulders.

The moderately steep to very steep Highsplint soils are on lower side slopes, on footslopes, and in south-facing coves. They are very deep and are medium textured. They have a very dark grayish brown surface layer and a yellowish brown and strong brown subsoil. These soils formed in colluvium.

The very steep Matewan soils are on ridgetops and shoulders. They are moderately deep and are moderately coarse textured. They have a very dark grayish brown surface layer and a yellowish brown and brownish yellow subsoil. These soils formed in acid material derived from sandstone.

The very steep Cloverlick soils are on north-facing side slopes and in coves. They are very deep and are medium textured. They have a very dark grayish brown surface layer and a dark yellowish brown, dark brown, yellowish brown, and brown subsoil. These soils formed in colluvium.

Nearly all of the acreage in this map unit is used as woodland. Slope, depth to bedrock, and a poor filtering capacity are limitations affecting most types of urban development.

6. Urban land-Udorthents-Craigsville

Urban land and areas of nearly level and gently sloping disturbed soils, fill material, and very deep, well drained soils that formed in sandy alluvium

This map unit consists of urban areas adjacent to the Guyandotte River, Tug Fork, and the major tributaries. It includes nearly level and gently sloping areas of disturbed soils, fill material, and very deep, well drained soils that formed in sandy alluvium. Slopes range from 0 to 8 percent.

This map unit makes up about 7 percent of the survey area. It is about 19 percent Udorthents, 13 percent Urban land, 12 percent Craigsville and similar soils, and 56 percent minor soils. Of minor extent in this map unit are the occasionally flooded Grisby soils on low bottoms; the occasionally flooded Sensabaugh and Lobdell soils on low floodplains; small areas of Highsplint soils, which formed in colluvium; the rarely flooded Chavies soils on toeslopes of alluvial plains along the larger streams; and the occasionally flooded Yeager soils on flood plains.

The nearly level and gently sloping Urban land consists of land covered by houses, buildings, streets, parking lots, railroad tracks, and other residential, industrial, and commercial structures. Most areas are covered by concrete, asphalt, or roofs.

The nearly level and gently sloping Udorthents are in areas that have been disturbed by earth moving activities. They vary in texture, color, and content of rock fragments. These soils are in areas along highways and railroads and in residential yards and other areas that have been excavated or filled, or both.

The nearly level Craigsville soils are in areas in yards, gardens, playgrounds, and other places that have not been disturbed by earth moving activities. They are very deep and are coarse textured. They have a dark brown surface layer, a yellowish brown subsoil, and a dark yellowish brown substratum. These soils formed in alluvium.

Nearly all of the acreage in this map unit has been developed for urban uses. Flooding, a poor filtering capacity, and room for adequate absorption fields are limitations affecting most types of urban development.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of

the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Craigsville very gravelly sandy loam is a phase of the Craigsville series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Lily-Matewan complex, 15 to 35 percent slopes, very stony, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Matewan-Highsplint-Guyandotte association, very steep, extremely stony, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Fiveblock and Kaymine soils, 35 to 80 percent slopes, extremely stony, is an undifferentiated group in this survey area.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AbB—Allegheny loam, 3 to 8 percent slopes

Setting

Landform: River and stream terraces along the upper reaches of the Tug Fork of the Big Sandy River in Mingo County

Composition

Allegheny soil: 90 percent
Inclusions: 10 percent

Typical Profile

Surface layer:
0 to 7 inches—very dark gray loam
7 to 10 inches—dark brown loam

Subsurface layer:
10 to 14 inches—dark yellowish brown loam

Subsoil:
14 to 45 inches—yellowish brown gravelly loam
45 to 60 inches—strong brown gravelly loam

Substratum:
60 to 66 inches—strong brown and yellowish brown gravelly sandy clay loam
66 to 80 inches—strong brown gravelly sandy clay loam with grayish mottles and black concretions

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate or high
Depth to a seasonal high water table: 5 to 7 feet
Flooding: None
Shrink-swell potential: Low
Hazard of erosion: Moderate
Slope class: Gently sloping
Stoniness: Nonstony
Natural fertility: Low
Reaction: In unlimed areas, strongly acid to extremely acid
Organic matter content in the surface layer: Moderate
Surface runoff: Medium
Depth to bedrock: More than 65 inches

Inclusions

- Highsplint soils on footslopes
- Chavies soils on rarely flooded low stream terraces
- Udorthents in areas that have been smoothed or filled for urban development

Use and Management

Most areas of this Allegheny soil have been cleared and developed (fig. 5). Some of the less accessible areas are used as woodland.

Woodland
Suitability: Well suited
Management concerns:
- Plant competition is the major management concern.

Figure 5.—A cemetery in a typical area of Allegheny loam, 3 to 8 percent slopes.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with planted seedlings.

Community development
Suitability: Well suited
Management concerns:
- The hazard of erosion and sedimentation are major management concerns.
Management considerations:
- Maintaining a plant cover on construction sites, establishing a plant cover in unprotected areas, and providing for the proper disposal of surface water help to control erosion and prevent sedimentation.

Cropland
Suitability: Well suited
Management concerns:
- The hazard of erosion is a major management concern.
Management considerations:
- Applying a conservation tillage system, growing crops in contour strips, including hay in crop rotations, and returning crop residue to the soil help to control erosion and maintain fertility and tilth.

Interpretive Groups

Land capability classification: 2e

BrG—Berks-Rock outcrop complex, extremely steep, extremely stony

Setting

Landform: Mountain slopes along the Tug Fork of the Big Sandy River, the Guyandotte River, and smaller tributaries throughout the survey area, mostly on the cutting outside bends of rivers or stream meanders
Slope range: 80 to 120 percent
Note: Slopes in this map unit are generally much steeper than those in surrounding map units.

Composition

Berks soil: 45 percent
Rock outcrop: 40 percent
Inclusions: 15 percent

Typical Profile

Berks
Surface layer:
0 to 2 inches—slightly decomposed plant materials
2 to 5 inches—brown channery loam

Subsoil:
5 to 18 inches—yellowish brown very channery silt loam
18 to 22 inches—strong brown extremely channery silt loam

Substratum:
22 to 28 inches—strong brown extremely channery silt loam
28 to 38 inches—fractured rippable shale

Rock outcrop

The Rock outcrop occurs as vertical exposures of hard sandstone and shale as much as 50 feet high (fig. 6).

Soil Properties and Qualities

Berks

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Extremely steep
Stoniness: Extremely stony
Natural fertility: Low
Reaction: In unlimed areas, extremely acid to slightly acid
Surface runoff: Very rapid
Depth to bedrock: 20 to 40 inches

Inclusions

- Matewan, Highsplint, and Guyandotte soils and soils that are less than 20 inches deep to bedrock; in similar landscape positions
- A few areas where slope is less than 80 percent
- Scattered areas of soils that have more stones or boulders at the soil surface

Use and Management

Most areas of this map unit are wooded. Common trees are scarlet oak, red oak, black oak, chestnut oak, white oak, yellow poplar, hickories, beech, basswood, and red maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been repeatedly damaged by fire. This unit is not suited to

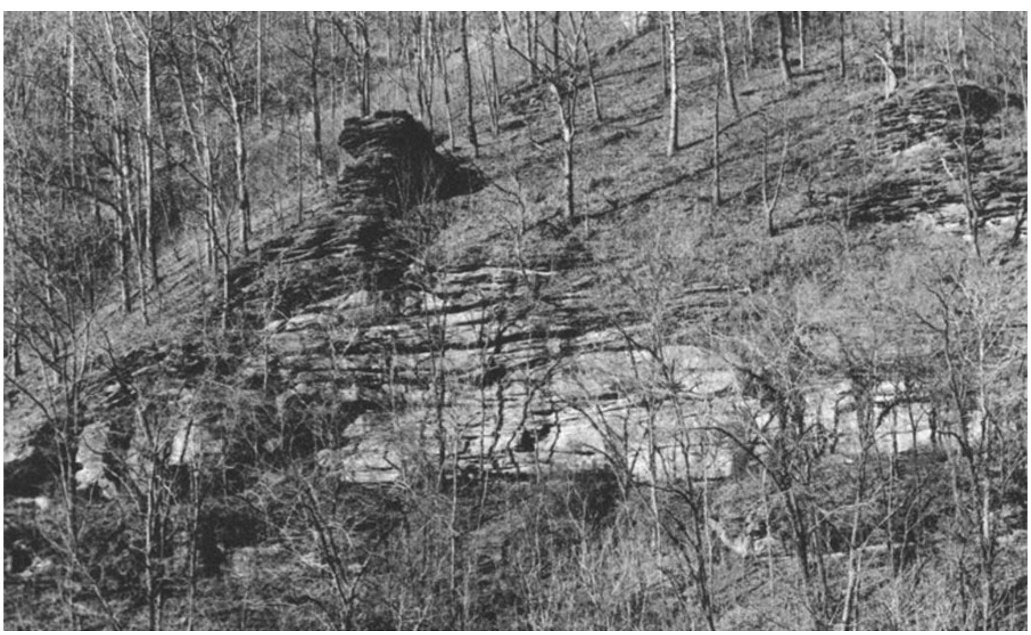


Figure 6.—A typical area of Berks-Rock outcrop complex, extremely steep, extremely stony.

cultivated crops, hay, pasture, or urban development because of the extreme slope, the vertical exposure of rock outcrop, and the stones at the soil surface.

Woodland
Suitability: Berks—moderately suited
Management concerns:
- Fire control and limitations affecting harvest compound the hazard of erosion, the extremely steep slopes, and the areas of rock outcrop.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, are needed when timber is harvested.
- Access roads and skid trails are all but impossible to construct on the extremely steep slopes.

Wildlife habitat
Suitability: Moderately suited to woodland wildlife
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.

Management considerations:
- Important understory vegetation, primarily growing in north-facing coves and on side slopes, includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: Berks—7s; Rock outcrop—8s

BSF—Berks-Shelocta association, very steep, extremely stony

Setting

Landform: Mountain slopes in areas dominated by shale and siltstone bedrock; Berks—ridges and the upper backslopes; Shelocta—middle and lower backslopes, footslopes, and toeslopes
Slope range: 35 to 80 percent

Composition

Berks soil: 40 percent
Shelocta soil: 35 percent
Inclusions: 25 percent

Typical Profile

Berks
Surface layer:
0 to 2 inches—slightly decomposed plant materials
2 to 5 inches—brown channery loam

Subsoil:
5 to 18 inches—yellowish brown very channery silt loam
18 to 22 inches—strong brown extremely channery silt loam

Substratum:
22 to 28 inches—strong brown extremely channery silt loam
28 to 38 inches—fractured rippable shale

Shelocta
Surface layer:
0 to 0.5 inch—moderately decomposed plant materials
0.5 inch to 4 inches—brown silt loam

Subsurface layer:
4 to 11 inches—yellowish brown silty clay loam

Subsoil:
11 to 39 inches—strong brown channery silty clay loam
39 to 55 inches—brown channery silty clay loam
55 to 80 inches—dark yellowish brown very channery silty clay loam

Soil Properties and Qualities

Berks
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low
Reaction: In unlimed areas, extremely acid to slightly acid
Surface runoff: Medium or high
Depth to bedrock: 20 to 40 inches

Shelocta
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low or moderate
Reaction: In unlimed areas, strongly acid to extremely acid
Surface runoff: High
Depth to bedrock: More than 60 inches

Inclusions

- Small areas of Matewan, Highsplint, and Guyandotte soils and soils that are less than 20 inches deep to bedrock; in similar landscape positions
- Soils that have slope of more 80 percent
- Scattered areas of soils that have more stones and boulders at the soil surface

Use and Management

Most areas of this map unit are wooded. Common trees are scarlet oak, red oak, black oak, chestnut oak, white oak, yellow poplar, hickories, beech, basswood, and red maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been repeatedly damaged by fire. This unit is not suited to cultivated crops, hay, pasture, or urban development because of the extreme slope and the stones at the surface.

Woodland
Suitability: Moderately suited
Management concerns:
- Fire control and the limitations affecting harvest are compounded by the hazard of erosion and the very steep slopes.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, are needed when timber is harvested.
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited to woodland wildlife
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.
- Important understory vegetation, primarily growing in north-facing coves and on side slopes that have cool aspect, includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 7s

Ch—Chavies fine sandy loam

Setting

Landform: Toeslopes on alluvial plains along the Tug Fork of the Big Sandy River in Mingo County, Spruce Fork in Logan County, and a few other major streams in the survey area
Slope range: 0 to 3 percent

Composition

Chavies soil: 90 percent
Inclusions: 10 percent

Typical Profile

Surface layer:
0 to 8 inches—dark brown fine sandy loam

Subsurface layer:
8 to 11 inches—brown fine sandy loam

Subsoil:
11 to 44 inches—dark yellowish brown fine sandy loam

Substratum:
44 to 65 inches—yellowish brown loamy sand

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: Rare

Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, very strongly acid to neutral in the A horizon and in the upper part of the B horizon and very strongly acid to moderately acid in the lower part of the B horizon and in the C horizon
Surface runoff: Very low
Depth to bedrock: More than 60 inches

Inclusions

- Yeager soils along streambanks
- Craigsville soils at the mouth of small hollows
- Udorthents in areas that have been smoothed or filled for urban development
- A soil with gray mottles in the subsoil; in wet areas on flood plains
- Soils that are not subject to flooding; on a few of the higher stream terraces

Use and Management

Many areas of this Chavies soil along Tug Fork and Spruce Fork have reverted to woodland. Common trees are yellow poplar, American sycamore, red maple, white oak, hickory, and black cherry.

Cropland
Suitability: Well suited to cultivated crops and hay
Management concerns:
- The hazard of erosion is a management concern.

Management considerations:
- Cultivated crops can be grown continuously, but a cover crop is needed to help control erosion.
- Incorporating residue from the cover crop into the soil helps to maintain fertility and tilth.

Woodland
Suitability: Well suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with planted seedlings.

Wildlife habitat
Suitability: Well suited to habitat
Management considerations:
- The vegetation in this map unit provides habitat for whitetail deer, wild boar, and wild turkey.
- Most openland wildlife species, such as bobwhite quail and cottontail rabbits, rarely inhabit areas of this soil.

Community development
Suitability: Poorly suited
Management concerns:
- The flooding in areas of this soil is the main limitation affecting dwellings and septic tank absorption fields.

Management considerations:
- Houses in areas of this soil commonly are built without basements but with enough crawl space so that if flooding does occur, it will not reach the first floor of the home.

- A better suited soil that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: 1

Ck—Chavies fine sandy loam, protected

Setting

Landform: Toeslopes on alluvial plains along the Guyandotte River in Logan County, downstream from R.D. Bailey Lake
Slope range: 0 to 3 percent

Composition

Chavies soil: 90 percent
Inclusions: 10 percent

Typical Profile

Surface layer:
0 to 8 inches—dark brown fine sandy loam

Subsurface layer:
8 to 11 inches—brown fine sandy loam

Subsoil:
11 to 44 inches—dark yellowish brown fine sandy loam

Substratum:
44 to 65 inches—yellowish brown loamy sand

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None or very rare
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, very strongly acid to neutral in the A horizon and in the upper part of the B horizon and very strongly acid to moderately acid in the lower part of the B horizon and in the C horizon
Surface runoff: Very low
Depth to bedrock: More than 60 inches

Inclusions

- Yeager soils along streambanks
- Craigsville soils at the mouth of small hollows
- Udorthents in areas that have been smoothed or filled for urban development
- Soils with gray mottles in the subsoil; in wet areas on flood plains

Use and Management

Many areas of this Chavies soil along the Guyandotte River have reverted to woodland. Common trees are yellow poplar, American sycamore, red maple, white oak, hickory, and black cherry.

Cropland
Suitability: Well suited
Management concerns:
- Erosion is a management concern.

Management considerations:
- Cultivated crops can be grown continuously, but a cover crop is needed to control erosion.
- Incorporating residue from the cover crop into the soil helps to maintain fertility and tilth.
- Protected areas along the Guyandotte River are not so well developed because access to the areas is limited.

Woodland
Suitability: Well suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with seedlings.

Community development
Suitability: Well suited
Management considerations:
- This soil is protected from flooding by a major flood-control structure.
- Although unlikely, flooding is possible if the structure should fail or if a storm exceeds the design capacity of the structure.
- Establishing a plant cover in disturbed areas and providing for the proper disposal of surface water help to control erosion and sedimentation.

Interpretive Groups

Land capability classification: 1

Cr—Craigsville very gravelly sandy loam

Setting

Landform: Alluvial fans at the mouth of hollows and narrow flood plains in the central, southern, and eastern parts of the survey area
Slope range: 0 to 3 percent

Composition

Craigsville soil: 90 percent
Inclusions: 10 percent

Typical Profile

Surface layer:
0 to 7 inches—dark brown very gravelly sandy loam

Subsurface layer:
7 to 10 inches—dark yellowish brown very gravelly sandy loam

Subsoil:
10 to 20 inches—dark yellowish brown extremely gravelly sandy loam
20 to 30 inches—dark yellowish brown extremely gravelly loamy coarse sand

Substratum:
30 to 65 inches—dark yellowish brown extremely gravelly loamy coarse sand

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low
Seasonal high water table: None
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, very strongly acid or strongly acid
Surface runoff: Negligible or very low
Depth to bedrock: More than 60 inches

Inclusions

- Yeager and Lobdell soils in similar landscape positions
- Udorthents in areas that have been smoothed or filled for urban development
- Soils that are similar to the Craigsville soils, except that they have more gravel and cobbles in their profiles
- A few areas where the soils are not subject to flooding

Use and Management

Most areas of this Craigsville soil have been cleared and are used as homesites, yards, or gardens. Some small cleared areas are used as hayland or pasture, and a few areas remain in woodland. Common trees are yellow poplar, red oak, scarlet oak, hickory, and black oak. The soil does not have sufficient water-holding capacity for some crops during dry years. Gravel and cobbles in the surface layer interfere with tillage. Growing cover crops and incorporating crop residue into the soil help to maintain fertility and tilth.

Woodland
Suitability: Moderately suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with planted seedlings.

Community development
Suitability: Poorly suited
Management concerns:
- Flooding is the main limitation of this soil on sites for dwellings.
- A poor-filtering capacity in the subsoil is a limitation on sites for septic tank absorption fields.

Management considerations:
- Houses have been built in areas of the included soils that are higher on the landscape and not subject to flooding.
- Houses in areas of this soil commonly are built without basements but with enough crawl space so that when flooding does occur, it will not reach the first floor of the home.
- A better suited soil that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: 2s

FkC—Fiveblock and Kaymine soils, 0 to 15 percent slopes, extremely stony

Setting

Landform: Mountaintop removal and contour strip mines, abandoned mines, and valley fills throughout the survey area

Note: The pattern and proportion of these soils are not uniform in all mapped areas. Individual areas may contain only one soil or a mixture of both soils.

Note: The mountaintop removal sites and contour strip mines generally have smooth, convex slopes and make up about 55 percent of the map unit (fig. 7). The areas of valley fill are generally benched convex slopes and make up about 35 percent of the map unit. Some areas of valley fill are made up of coal refuse covered by 3 to 4 feet of overburden.

Composition

Fiveblock or Kaymine soil, or both: 90 percent
Inclusions: 10 percent

Typical Profile

Fiveblock
Surface layer:
0 to 2 inches—very dark grayish brown very channery sandy loam
2 to 10 inches—very dark gray very channery sandy loam

Substratum:
10 to 65 inches—very dark gray very channery sandy loam

Figure 7.—A large area of Fiveblock and Kaymine soils, 0 to 15 percent slopes, extremely stony. An area of Matewan-Highsplint-Guyandotte association, very steep, extremely stony, is in the background.

Kaymine
Surface layer:
0 to 4 inches—dark grayish brown very channery loam

Substratum:
4 to 14 inches—dark grayish brown very channery loam
14 to 65 inches—dark grayish brown extremely channery loam

Soil Properties and Qualities

Fiveblock
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low to moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level to strongly sloping
Stoniness: Extremely stony
Natural fertility: Medium or high
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Negligible to low
Depth to bedrock: More than 60 inches

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level to strongly sloping
Stoniness: Extremely stony
Natural fertility: Medium
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Very low to medium
Depth to bedrock: More than 60 inches

Inclusions

- Matewan soils on ridgetops
- Highsplint and Guyandotte soils on the upper side slopes
- Small wet areas on benches
- A few areas where stones and boulders cover more of the soil surface

Use and Management

Most areas of these soils support grasses and legumes. Some older reclaimed areas support small trees, such as black locust, yellow poplar, red maple, crabapple, and hawthorn. Many areas support plantings of autumn olive and multiflora rose. The soils are unsuited to cultivated crops and hay but can be used for pasture. Experimental orchards and vineyards have been grown on these fertile but droughty soils. With level land at a premium in the survey area, this map unit has potential for commercial, industrial, and residential development. Concerns over availability of water and sewage disposal and possible differential settling need to be addressed.

Woodland
Suitability: Moderately suited

Management concerns:
- The low available water capacity, competition from grasses and legumes, the threat of fire, and soil compaction make establishment of good timber stands difficult.

Management considerations:
- Planting adequate numbers of healthy seedlings at the proper time of the year and planting suitable species help to ensure establishment of a healthy stand.
- Suitable species include eastern white pine, Virginia pine, black locust, yellow poplar, red maple, and royal paulownia.

Wildlife habitat

Suitability: Moderately suited

Management considerations:
- The variety of vegetation in this map unit provides suitable habitat for grouse, turkey, rabbit, whitetail deer, and European wild boar.
- The European wild boar, which was introduced into rugged areas in the northern part of Logan County, makes its wallows in small wet areas on benches.

Community development

Suitability: Poorly suited

Management concerns:
- The extreme variability of the soils and the high level of soil disturbance are the main limitations on sites for dwellings.
- The hazard of erosion and differential settling are very severe limitations and major management concerns on sites for dwellings and septic tank absorption fields.

Management considerations:
- Dwellings and septic tank absorption fields should be built in areas of soils that have fewer limitations.
- Professional design assistance should be utilized.
- Specific sites should be evaluated before construction is started.
- Alternative waste disposal options should be discussed with the local health department before systems are installed.
- If the vegetative cover is removed, establishing a plant cover in unprotected areas and providing for the proper disposal of surface water help to control erosion and sedimentation.

Interpretive Groups

Land capability classification: 7s

FkF—Fiveblock and Kaymine soils, 35 to 80 percent slopes, extremely stony

Setting

Landform: Mountaintop removal and contour strip mines (fig. 8), abandoned mines, and valley fills throughout the survey area

Note: The pattern and proportion of these soils are not uniform in all mapped areas. Individual areas may contain only one soil or a mixture of both soils.

Note: The mountaintop removal sites and contour strip mines generally have smooth, convex slopes and make up about 55 percent of the map unit. The areas of valley fill are generally benched convex slopes and make up about 35 percent of the map unit. Some areas of valley fill are made up of coal refuse covered by 3 to 4 feet of overburden.

Composition

Fiveblock or Kaymine soil, or both: 90 percent

Figure 8.—A good example of contour strip mining in progress, before reclamation, with a bench and out slope.

Inclusions: 10 percent

Typical Profile

Fiveblock
Surface layer:
0 to 2 inches—very dark grayish brown very channery sandy loam
2 to 10 inches—very dark gray very channery sandy loam

Substratum:
10 to 65 inches—very dark gray extremely channery sandy loam

Kaymine
Surface layer:
0 to 4 inches—dark grayish brown very channery loam

Substratum:
4 to 14 inches—dark grayish brown very channery loam
14 to 65 inches—dark grayish brown extremely channery loam

Soil Properties and Qualities

Fiveblock
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low to moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony

Natural fertility: Medium or high
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Medium
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Inclusions

- Matewan soils on ridgetops
- Highsplint and Guyandotte soils on adjacent side slopes
- A few areas where stones and boulders cover more of the soil surface

Use and Management

Most areas of these soils support grasses and legumes. Some older reclaimed areas support small trees, such as black locust, yellow poplar, red maple, crabapple, and hawthorn. Many areas support plantings of autumn olive and multiflora rose. The soils are unsuited to cultivated crops, hay, pasture, and community development because of the very steep slopes and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- The low available water capacity, competition from grasses and legumes, soil compaction, and the threat of fire make establishment of new timber stands difficult.

Management considerations:
- Planting adequate numbers of healthy seedlings at the proper time of the year and planting suitable species help to ensure establishment of a healthy stand.
- Suitable species include eastern white pine, Virginia pine, black locust, yellow poplar, red maple, and royal paulownia.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The variety of vegetation in this map unit provides suitable habitat for grouse, turkey, rabbit, whitetail deer, and European wild boar.
- The European wild boar, which was introduced into the more rugged areas of northern Logan County, makes its wallows in small wet areas on benches.

Interpretive Groups

Land capability classification: 7s

GmE—Gilpin-Matewan complex, 25 to 35 percent slopes, very stony

Setting

Landform: Ridges on mountains made up of interbedded sandstone and shale; in areas adjacent to Lincoln County

Composition

Gilpin soil: 40 percent
Matewan soil: 35 percent
Inclusions: 25 percent

Typical Profile

Gilpin
Surface layer:
0 to 2 inches—slightly decomposed leaf litter
2 to 3 inches—very dark gray, moderately decomposed leaf litter
3 to 6 inches—very dark grayish brown silt loam

Subsoil:
6 to 16 inches—yellowish brown channery silt loam
16 to 28 inches—brown channery silty clay loam

Substratum:
28 to 33 inches—interbedded soft shale, siltstone, and fine grained sandstone

Bedrock:
33 inches—hard, fine grained sandstone

Matewan
Organic layers:
0 to 3 inches; slightly decomposed leaf litter
3 to 4 inches; very dark brown, moderately decomposed leaf litter

Surface layer:
4 to 6 inches; olive brown sandy loam

Subsoil:
6 to 9 inches; olive brown channery sandy loam
9 to 26 inches; yellowish brown channery sandy loam

Substratum:
26 to 34 inches; yellowish brown and dark yellowish brown extremely channery sandy loam

Bedrock:
34 inches; hard sandstone

Soil Properties and Qualities

Gilpin
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Steep

Stoniness: Very stony
Natural fertility: Very low or low
Reaction: In unlimed areas, strongly acid to extremely acid
Surface runoff: High
Depth to bedrock: 20 to 40 inches

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Stoniness: Very stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low
Depth to bedrock: 20 to 40 inches

Inclusions

- Berks soils and a loamy soil that is less than 20 inches deep to bedrock; on ridges
- Fiveblock and Kaymine soils in areas of recent strip mines
- A few areas of sandstone rock outcrop
- Soils with gray mottles in the subsoil; in wet areas on the upper side slopes

Use and Management

Most areas of this map unit are wooded. Common trees on ridgetops include chestnut oak, scarlet oak, hickory, red maple, and white oak. In many areas the trees are of poor quality because they have been repeatedly damaged by fire. This unit is not suited to cultivated crops, hay, pasture, or community development because of the slope and the stones at the surface.

Woodland
Suitability: Moderately suited
Management concerns:
- Fire control, limitations affecting harvesting, and the hazard of erosion are major management concerns.

Management considerations:
- Road access onto these remote ridgetops is rare because the adjacent side slopes are long and very steep.
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings after use help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.

Interpretive Groups

Land capability classification: 6s

Gw—Grigsby loam

Setting

Landform: Low stream terrace treads and flood plains; along secondary streams in the northwestern part of the survey area
Slope range: 0 to 3 percent

Composition

Grigsby soil: 80 percent
Inclusions: 20 percent

Typical Profile

Surface layer:
0 to 7 inches—brown loam
7 to 12 inches—brown sandy loam

Subsoil:
12 to 20 inches—brownish yellow sandy loam
20 to 31 inches—yellowish brown sandy loam
31 to 42 inches—yellowish brown sandy loam with pockets of silt loam

Substratum:
42 to 65 inches—yellowish brown sandy loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or high
Depth to a seasonal high water table: 3.5 to 6.0 feet
Flooding: Occasional or rare
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: High
Reaction: In unlimed areas, moderately acid to neutral in the solum and strongly acid to neutral in the substratum
Surface runoff: Very low or low
Depth to bedrock: More than 60 inches

Inclusions

- Yeager soils on streambanks
- Small areas of Udorthents in low areas that have been smoothed and filled for community development
- A soil with gray mottles in the subsoil; in wet areas near footslopes

Use and Management

Most areas of this Grigsby soil are used as hayland or pasture. Other areas are used for gardens, or they have reverted to woodland.

Cropland
Suitability: Moderately suited
Management concerns:
- Late spring frosts are a management concern because poor air drainage can produce frost pockets in the narrow valleys.

Management considerations:
- This soil is easily tilled and can be worked throughout a wide range in moisture content.
- This soil may not have sufficient moisture capacity for some crops during dry years.
- Crops are subject to damage from flooding, although most flooding occurs during winter and early spring.
- Growing cover crops and incorporating crop residue into the soil help to maintain fertility and tilth.
- A variety of early and late season garden crops can be grown in areas of the soil.

Woodland
Suitability: Moderately suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- The common trees are yellow poplar, American sycamore, river birch, locust, and box elder.
- Intensive management is needed to limit competition from undesirable plants.

Community development
Suitability: Unsuited
Management concerns:
- The flooding is the main limitation of this soil on sites for dwellings.
- The moderately rapid permeability is a limitation affecting septic tank absorption fields in many areas.

Management considerations:
- A better suited site that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: 2w

HgE—Highsplint channery loam, 15 to 35 percent slopes, very stony

Setting

Landform: Footslopes and coves on the lower third of mountain flanks throughout the survey area

Composition

Highsplint soil: 80 percent
Inclusions: 20 percent

Typical Profile

Surface layer:
0 to 0.5 inch—slightly decomposed plant materials
0.5 inch to 3 inches—very dark grayish brown channery loam

Subsurface layer:
3 to 6 inches—yellowish brown channery loam

Subsoil and substratum:
6 to 41 inches—strong brown very channery loam
41 to 65 inches—yellowish brown extremely channery loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep or steep
Stoniness: Very stony
Natural fertility: Low or moderate
Reaction: In unlimed areas, extremely acid to slightly acid in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Inclusions

- Matewan and Guyandotte soils in similar landscape positions
- Scattered areas of Udorthents in disturbed or graded areas
- Isolated areas of sandstone rock outcrop that is between 5 and 15 feet high
- Soils that have slope of more than 35 percent
- A few areas where the soils have a lower content of rock fragments throughout the profile

Use and Management

Most areas of this Highsplint soil are wooded. The common trees are red oak, white oak, hickory, yellow poplar, and sugar maple. The soil is not suited to cultivated crops, hay, pasture, or community development because of the slope and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- Fire control, the hazard of erosion, and plant competition are management concerns.

Management considerations:
- Applying proper woodland management techniques, such as timber stand improvement, increases the value and yield of woodland.
- Establishing roads and skid trails on the contour helps to control erosion.
- Diverting surface water away from logging roads, establishing and maintaining a crown in the roads, and establishing and maintaining sod on roadbanks help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar.
- The European wild boar, which was introduced into rugged areas in the northern part of Logan County, makes its wallows in seepy spots on benches.
- Important understory vegetation, primarily growing in coves, includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 6s

HMF—Highsplint-Matewan-Cloverlick association, very steep, extremely stony

Setting

Landform: Hills and ridges in the northwestern part of the survey area; Highsplint—middle and lower south-facing backslopes, footslopes, and coves; Matewan—typically convex or linear backslopes, shoulder slopes, nose slopes, and ridge crests; and Cloverlick—typically middle and lower north-facing backslopes, footslopes, and coves; soils formed dominantly in material derived from weathered sandstone
Slope range: 35 to 65 percent

Composition

Highsplint soil: 35 percent
Matewan soil: 25 percent
Cloverlick soil: 15 percent
Inclusions: 25 percent

Typical Profile

Highsplint
Surface layer:
0 to 2 inches—slightly decomposed plant materials
2 to 5 inches—brown loam

Subsurface layer:
5 to 11 inches—yellowish brown channery loam

Subsoil:
11 to 50 inches—yellowish brown very channery loam

Substratum:
50 to 65 inches—yellowish brown extremely channery fine sandy loam

Matewan
Surface layer:
0 to 1 inch—very dark brown, moderately decomposed plant materials
1 to 3 inches—olive brown sandy loam

Subsurface layer:
3 to 6 inches—olive brown channery sandy loam

Subsoil:
6 to 23 inches—yellowish brown channery sandy loam
23 to 31 inches—yellowish brown and dark yellowish brown very channery sandy loam

Bedrock:
31 inches—hard sandstone

Cloverlick
Surface layer:
0 to 2 inches—slightly decomposed plant materials
2 to 9 inches—very dark grayish brown loam

Subsurface layer:
9 to 13 inches—dark yellowish brown and dark brown channery loam

Subsoil:
13 to 29 inches—yellowish brown very channery loam

29 to 45 inches—brown very channery loam
45 to 50 inches—brown very channery silt loam

Substratum:
50 to 65 inches—yellowish brown extremely channery loam

Soil Properties and Qualities

Highsplint
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low or moderate
Reaction: In unlimed areas, extremely acid to slightly acid in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low
Depth to bedrock: 20 to 40 inches

Cloverlick
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: High
Reaction: Slightly acid to extremely acid in the A horizon and in the upper part of the Bw horizon and strongly acid to extremely acid in the lower part of the Bw horizon and in the C horizon
Surface runoff: High
Depth to bedrock: More than 60 inches

Inclusions

- Gilpin and Shelocta soils on ridgetops and the upper side slopes

- A very deep soil with a layer in the subsoil that restricts root growth; on footslopes
- Scattered areas of sandstone rock outcrop
- A few areas of soils that have slopes of more than 65 percent
- Soils that have more stones and boulders at the soil surface

Use and Management

Most areas of this map unit are wooded. Common trees on ridgetops and south-facing slopes include chestnut oak, scarlet oak, hickory, and white oak. Common trees on north-facing slopes and in coves include red oak, black oak, American beech, yellow poplar, basswood, and sugar maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been damaged by fire. The soils are not suited to cultivated crops, hay, pasture, or urban development because of the very steep slopes and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- The long, very steep slopes compound the problems of controlling fires, choosing harvesting techniques, and reducing the hazard of erosion.
- Access to these remote areas is provided mostly by widely spaced mine roads.
- The fire hazard is greater near the numerous residential developments in the narrow valleys.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, are recommended for timber harvest.
- Establishing access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings after use help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.
- Important understory vegetation, primarily growing in north-facing coves and on side slopes, includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 7s

HuE—Highsplint-Urban land complex, 15 to 35 percent slopes, very stony

Setting

Landform: Footslopes that commonly are adjacent to major roads; throughout the survey area

Composition

Highsplint soil: 45 percent
Urban land: 35 percent
Inclusions: 20 percent

Typical Profile

Highsplint
Surface layer:
0 to 0.5 inch—slightly decomposed plant materials
0.5 inch to 3 inches—very dark grayish brown channery loam

Subsurface layer:
3 to 6 inches—yellowish brown channery loam

Subsoil:
6 to 41 inches—strong brown very channery loam
41 to 53 inches—yellowish brown extremely channery loam

Substratum:
53 to 65 inches—yellowish brown extremely channery loam

Urban land
Urban land consists of areas covered by houses, buildings, streets, parking lots, and other residential, industrial, and commercial structures.

Soil Properties and Qualities

Highsplint
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep or steep
Stoniness: Very stony
Natural fertility: Low or moderate
Reaction: In unlimed areas, extremely acid to slightly acid in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Urban land
Onsite investigation is necessary to determine soil properties in these areas.

Inclusions

- Matewan and Guyandotte soils on nose slopes and footslopes
- Udorthents in areas of urban development
- Soils with slope of more than 35 percent; in narrow areas on mountainsides
- A soil with a lower content of rock fragments throughout the profile; on some footslopes

Use and Management

This map unit has been developed mostly as sites for single-family dwellings due to the scarcity of alternative sites in the survey area. Most undisturbed areas of the Highsplint soil are used as yards and gardens. A few areas remain in woodland. Common trees are red oak, white oak, hickory, yellow poplar, and sugar maple. This unit is not suited to cultivated crops, hay, or pasture because of the moderately steep or steep slopes and the stones at the surface.

Community development
Suitability: Poorly suited

Management concerns:
- The moderately steep and steep slopes and the hazard of erosion are the main limitations of the Highsplint soil on sites for dwellings and septic tank absorption fields.

Management considerations:
- Most cleared areas are used as sites for single-family homes or as yards or gardens.
- A better suited, less sloping site should be selected; however, selecting a less sloping alternative site may not always be practical because of the scarcity of building lots in the survey area.
- If an alternative site is not available, extra care should be taken during construction to ensure protection from soil slippage and ground water seepage.
- The local health department should be consulted about innovative or alternative waste disposal options before systems are installed.
- Removing excess water from around foundations helps to prevent slippage.
- Once the vegetative cover is removed, immediately establishing a plant cover in the unprotected area and providing for the proper disposal of surface water help to control erosion and sedimentation.

Woodland

Suitability: Moderately suited

Management concerns:
- Fire control and the hazard of erosion are the major management concerns.
- Plant competition and seedling mortality are additional management concerns.

Management considerations:
- Timber harvest should be highly selective so as not to create conflicts with urban development.
- In most areas, the trees should be left as undisturbed as possible to help provide landscaping and to protect the soil from slippage.

Interpretive Groups

Land capability classification: Highsplint—6s; Urban land—none assigned

ImF—Itmann extremely channery sandy loam, very steep

Setting

Landform: Rilled and gullied out slopes with little or no vegetative cover; formed in mine spoil made up of coal and shale carboliths, commonly known as gob, resulting from mining or washing operations

Slope range: 35 to 80 percent

Composition

Itmann soil: 70 percent
Inclusions: 30 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark gray extremely channery sandy loam

Substratum:
5 to 65 inches—black extremely channery sandy loam

Soil Properties and Qualities

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid or rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Nonstony
Natural fertility: Very low
Reaction: In unlimed areas, extremely acid to strongly acid
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Berks, Matewan, Highsplint, and Pineville soils on adjacent, undisturbed side slopes
- Cedarcreek and Fiveblock soils in adjacent strip-mined areas
- Areas where the surface layer and substratum of soils have burned intensely, leaving only cinders and ash
- A soil similar to the Itmann soil but with less acid throughout its profile

Use and Management

As coal washing and cleaning technology has advanced, it has become economically feasible to reclaim the gob, extract the valuable remaining coal, and separate the coal from the high-carbon shale. This soil is unsuited to cultivated crops, hay, pasture, community development, or woodland because of the steep and very steep slopes, the acid nature of the parent material, very low natural fertility, high surface temperatures in the summer, and the hazard of erosion. Areas are difficult to revegetate because of these conditions. Most unreclaimed areas still remain barren or support limited growth of broomsedge, blackberry, beech, red maple, and scarlet oak. The hazard of rill and gully erosion is very severe.

Woodland
Suitability: Unsuited
Management concerns:
- The very low available water capacity, acid conditions, very low natural fertility, and high summer temperatures on the dark surface make establishment of new timber stands difficult.

Management considerations:
- Reclamation may be accomplished by covering the refuse with a cap of natural soil material and then revegetating.
- Controlling surface runoff by diversions, applying lime and fertilizer, heavy seeding, and mulching may help to establish vegetation and control erosion.

Interpretive Groups

Land capability classification: 7s

KcF—Kaymine-Cedarcreek-Matewan complex, very steep, extremely stony

Setting

Landform: Mountain slopes along the eastern edge of the survey area; Kaymine and Cedarcreek—contour strip mines with gently sloping to strongly sloping benches and very steep out slopes, mostly below nearly vertical highwalls; Matewan—undisturbed slopes between the contours

Note: Most of these areas are the result of practices that existed before regulations required the land be returned to the original contour after mining.
Slope range: 8 to 80 percent

Composition

Kaymine soil: 35 percent
Cedarcreek soil: 25 percent
Matewan soil: 20 percent
Inclusions: 20 percent

Typical Profile

Kaymine
Surface layer:
0 to 4 inches—dark grayish brown very channery loam

Substratum:
4 to 14 inches—dark grayish brown very channery loam
14 to 65 inches—dark grayish brown extremely channery loam

Cedarcreek
Surface layer:
0 to 2 inches—brown very channery loam

Substratum:
2 to 16 inches—grayish brown very channery loam
16 to 38 inches—grayish brown extremely channery loam
38 to 65 inches—yellowish brown extremely channery loam

Matewan
Surface layer:
0 to 0.5 inch—very dark brown, moderately decomposed plant materials
0.5 inch to 4 inches—very dark grayish brown very channery sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown very channery sandy loam

Subsoil:
8 to 30 inches—brownish yellow extremely channery loam

Substratum:
30 to 33 inches—brownish yellow extremely flaggy loam

Bedrock:
33 inches—hard sandstone

Soil Properties and Qualities

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Medium
Reaction: In unlimed areas, moderately acid to mildly alkaline

Surface runoff: Low to high
Depth to bedrock: More than 60 inches

Cedarcreek
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low
Reaction: In unlimed areas, strongly acid to extremely acid
Surface runoff: Low to high
Depth to bedrock: More than 60 inches

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Very low or low
Depth to bedrock: 20 to 40 inches

Inclusions

- Berks soils and areas of rock outcrop on ridgetops and nose slopes
- Areas where Fiveblock soils are intermingled with the Kaymine soil; on landforms similar to those of the Kaymine soil
- Areas where stones and boulders cover more of the soil surface

Use and Management

Most areas of this complex are wooded. Common trees on the Kaymine and Cedarcreek soils include black locust, yellow poplar, American sycamore, eastern white pine, and Virginia pine, and those on the Matewan soil include chestnut oak, scarlet oak, hickories, and white oak. The understory vegetation commonly consists of black birch, red maple, sourwood, sassafras, blackberry, and multiflora rose. In many areas the trees are of poor quality because they have been damaged by fire. This map unit is not suited to cultivated crops, hay, pasture, or community development because of the slope, stones at the surface, and the highwalls. Some open areas that support grasses, legumes, and low-growing shrubs, such as autumn olive, have limited suitability as pasture.

Woodland
Suitability: Poorly suited
Management concerns:
- The long, very steep slopes and nearly vertical highwalls limit access and compound the problem of fire control and the hazard of erosion.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, make harvesting timber safer and less damaging in areas of the Matewan soil.
- Establishing access roads and skid trails along the contour or on benches, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Poorly suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.

Interpretive Groups

Land capability classification: 7s

KfB—Kaymine and Fiveblock soils, 0 to 8 percent slopes, extremely stony

Setting

Landform: Mountaintop removal and contour strip mines, abandoned mines, and valley fills throughout the survey area
Note: The pattern and proportion of these soils are not uniform in all mapped areas. Individual areas may contain only one soil or a mixture of both soils.
Note: The mountaintop removal sites and contour strip mines generally have smooth, convex slopes and make up about 55 percent of the map unit. The areas of valley fill are generally benched convex slopes and make up about 35 percent of the map unit. Some areas of valley fill are made up of coal refuse covered by 3 to 4 feet of overburden.

Composition

Kaymine or Fiveblock soil, or both: 70 percent
Inclusions: 30 percent

Typical Profile

Kaymine
Surface layer:
0 to 3 inches—grayish brown channery loam

Substratum:
3 to 23 inches—gray very channery silt loam with yellow and reddish brown mottles
23 to 41 inches—gray extremely channery loam with yellow mottles
41 to 65 inches—gray extremely channery loam with yellow and brown mottles

Fiveblock
Surface layer:
0 to 4 inches—yellowish brown channery loam

Substratum:
4 to 25 inches—yellowish brown very channery sandy loam
25 to 50 inches—yellowish brown extremely flaggy sandy loam
50 to 65 inches—yellowish brown very flaggy sandy loam

Soil Properties and Qualities

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Extremely stony
Natural fertility: Moderate
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Very low to medium
Depth to bedrock: More than 60 inches

Fiveblock
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low to moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Extremely stony
Natural fertility: Medium or high
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Negligible to low
Depth to bedrock: More than 60 inches

Inclusions

- Matewan soils on ridgetops
- Highsplint and Guyandotte soils on adjacent undisturbed side slopes
- Cedarcreek soils and a soil that is similar to the Fiveblock soil but more acid in the profile
- Scattered areas of sandstone or shale rock outcrop
- Small wet areas in depressions
- A few areas where stones and boulders cover more of the soil surface

Use and Management

Most areas of this map unit support grasses and legumes. Some older reclaimed areas support small trees, such as black locust, yellow poplar, red maple, crabapple, and hawthorn. Many areas support plantings of autumn olive and multiflora rose. This map unit is unsuited to cultivated crops and hay but is suited to pasture. A few experimental sites such as orchards and vineyards are in areas of these somewhat fertile but droughty soils. With a premium on level land in the survey area, this map unit is in demand for commercial, industrial, and residential development.

Woodland
Suitability: Moderately suited
Management concerns:
- The low available water capacity, plant competition from grasses and legumes, fire control, and soil compaction make establishment of timber stands difficult.

Management considerations:
- Planting adequate numbers of healthy seedlings at the proper time of the year and planting suitable species help to ensure a healthy stand of timber.

- Suitable species include eastern white pine, Virginia pine, black locust, yellow poplar, red maple, and royal paulownia.

Community development
Suitability: Poorly suited
Management concerns:
- The extreme variability in soil properties and the high level of disturbance in areas of these soils are the main limitations on sites for dwellings.
- Where possible, alternative sites that have fewer limitations should be selected as sites for dwellings and septic tank absorption fields.
- Erosion and differential settling are very severe limitations and are the major management concerns.
- The low available water capacity and problems with sewage disposal are additional limitations affecting development.

Management considerations:
- Professional design assistance and onsite evaluation should be obtained on sites for community development prior to construction.
- Approval from the local health department should be obtained before installing any traditional or alternative waste disposal system in areas of these soils.
- Establishing a plant cover in unprotected areas and providing for the proper disposal of surface water help to control erosion and sedimentation.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The wide variety of vegetation in this map unit provides suitable habitat for grouse, turkey, rabbit, whitetail deer, and wild boar.
- The European wild boar, which was introduced into rugged areas in the northern part of Logan County, makes its wallows in seepy spots on benches.

Interpretive Groups

Land capability classification: 6s

KfF—Kaymine and Fiveblock soils, 35 to 65 percent slopes, extremely stony

Setting

Landform: Mountain slopes and valley fills throughout the survey area
Note: The pattern and proportion of these soils are not uniform in all areas. Individual areas may contain only one soil or a mixture of both soils.
Note: The mountaintop removal sites and contour strip mines generally have smooth, convex slopes and make up about 55 percent of the map unit. The areas of valley fill are generally benched convex slopes and make up about 35 percent of the map unit.

Composition

Kaymine or Fiveblock soil, or both: 75 percent
Inclusions: 25 percent

Typical Profile

Kaymine
Surface layer:
0 to 3 inches—grayish brown channery loam

Substratum:
3 to 23 inches—gray very channery silt loam with yellow and reddish brown mottles
23 to 41 inches—gray extremely channery loam with yellow mottles
41 to 65 inches—gray extremely channery loam with yellow and brown mottles

Fiveblock
Surface layer:
0 to 4 inches—yellowish brown channery loam

Substratum:
4 to 25 inches—yellowish brown very channery sandy loam
25 to 65 inches—yellowish brown very flaggy sandy loam

Soil Properties and Qualities

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Moderate
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Fiveblock
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low to moderate
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Medium or high
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Matewan soils on ridgetops
- Highsplint and Guyandotte soils on adjacent undisturbed side slopes
- A mine soil that has more clay in the profile
- A mine soil that is similar to the Fiveblock soil but is more acid throughout the profile
- Scattered areas of sandstone or shale rock outcrop
- A few areas where stones and boulders cover more of the soil surface

Use and Management

Recently reclaimed areas of this map unit support grasses and legumes. Some older reclaimed areas also support small trees, such as black locust, yellow poplar, red maple, crabapple, and hawthorn. Shrubs in areas of this unit include autumn olive

and multiflora rose. This map unit is unsuited to cultivated crops, hay, pasture, and urban development because of the steep and very steep slopes and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- The low available water capacity, competition from grasses and legumes, and fire control make establishment of timber stands difficult.

Management considerations:
- Planting adequate numbers of healthy seedlings at the proper time of the year and planting suitable species help to ensure the establishment of timber stands.
- Suitable species include eastern white pine, Virginia pine, black locust, yellow poplar, red maple, and royal paulownia.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The wide variety of vegetation in this map unit provides suitable habitat for grouse, turkey, rabbit, whitetail deer, and wild boar.
- The European wild boar, which was introduced into rugged areas in the northern part of Logan County, makes its wallows in wet areas.

Interpretive Groups

Land capability classification: 7s

KrF—Kaymine-Rock outcrop complex, very steep, extremely stony

Setting

Landform: Gently sloping and strongly sloping benches and very steep out slopes, generally below nearly vertical highwalls
Slope range: 8 to 80 percent
Note: The mountaintop removal and contour strip mines are in areas along the eastern edge of the survey area. Most of the mining occurred before legislation required that the landscape be returned to its original contour.

Composition

Kaymine soil: 65 percent
Rock outcrop: 15 percent
Inclusions: 20 percent

Typical Profile

Kaymine
Surface layer:
0 to 4 inches—dark grayish brown very channery loam

Substratum:
4 to 14 inches—dark grayish brown very channery loam
14 to 65 inches—dark grayish brown extremely channery loam

Rock outcrop
The Rock outcrop generally occurs as areas of exposed bedrock or highwalls about 25 to 100 feet high. It is a result of strip-mining for coal. The bedrock is sandstone or sandstone with some shale and siltstone.

Soil Properties and Qualities

Kaymine
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Moderate
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Low to high
Depth to bedrock: More than 60 inches

Inclusions

- Matewan soils on undisturbed ridgetops
- Fiveblock soils in mine spoil derived mostly from sandstone
- Cedarcreek soils in areas of acid mine spoil
- A few areas of soils that have more stones and boulders at the soil surface

Use and Management

Most areas of this map unit are wooded. Common trees in areas of the Kaymine soil include black locust, yellow poplar, American sycamore, eastern white pine, and Virginia pine. Understory vegetation in these areas consists of black birch, red maple, sourwood, sassafras, blackberry, and multiflora rose. In many areas the trees are of poor quality because they have been damaged by fire. This map unit generally is not suited to cultivated crops, hay, pasture, or community development because of the slope and the stones at the soil surface; however, in a few benched areas, it supports grasses, legumes, and autumn olive and has limited suitability to use as pasture.

Woodland
Suitability: Poorly suited
Management concerns:
- The long, very steep slopes and nearly vertical highwalls compound limitations affecting harvesting, such as fire control and the hazard of erosion.

Management considerations:
- Using specialized equipment and management techniques, such as cable yarding, is safer and results in less soil compaction.
- Laying out access roads and skid trails along the contour or in benched areas, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings after use help to control erosion.

Wildlife habitat
Suitability: Poorly suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.

Interpretive Groups

Land capability classification: Kaymine—7s; Rock outcrop—8s

LmE—Lily-Matewan complex, 15 to 35 percent slopes, very stony

Setting

Landform: Summits on mountaintops and ridges that are dominated mostly by sandstone bedrock; throughout the survey area

Composition

Lily soil: 50 percent
Matewan soil: 30 percent
Inclusions: 20 percent

Typical Profile

Lily
Surface layer:
0 to 0.5 inch—slightly decomposed plant materials
0.5 inch to 4 inches—dark brown sandy loam

Subsurface layer:
4 to 10 inches—mixed yellowish brown and brown sandy loam

Subsoil:
10 to 16 inches—mixed brownish yellow and brown sandy loam
16 to 26 inches—strong brown channery sandy clay loam

Substratum:
26 to 28 inches—strong brown channery sandy clay loam
28 to 37 inches—moderately weathered sandstone

Bedrock:
37 inches—hard sandstone

Matewan
Surface layer:
0 to 0.5 inch—very dark brown, moderately decomposed plant materials
0.5 inch to 4 inches—very dark grayish brown very channery sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown very channery sandy loam

Subsoil:
8 to 30 inches—brownish yellow extremely channery loam

Substratum:
30 to 33 inches—brownish yellow extremely flaggy loam

Bedrock:
33 inches—hard sandstone

Soil Properties and Qualities

Lily
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None

Shrink-swell potential: Low
Slope class: Steep
Stoniness: Very stony
Natural fertility: Very low or low
Reaction: In unlimed areas, strongly acid to extremely acid
Surface runoff: Medium or high
Depth to bedrock: 20 to 40 inches

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Stoniness: Very stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low
Depth to bedrock: 20 to 40 inches

Inclusions

- Berks soils on ridgetops
- Fiveblock and Kaymine soils in areas of recent strip mines
- Scattered areas of sandstone rock outcrop

Use and Management

Most areas of these soils are wooded. Common trees include chestnut oak, scarlet oak, hickory, red maple, and white oak. In many areas the trees are of poor quality because they have been damaged by fire. These soils are not suited to cultivated crops, hay, pasture, or community development because of the slope and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- Harvesting timber on the remote ridgetops presents problems because the adjacent long, very steep side slopes limit access.
- Fire control and the hazard of erosion are major management concerns.

Management considerations:
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.

Interpretive Groups

Land capability classification: 6s

MHF—Matewan-Highsplint-Guyandotte association, very steep, extremely stony

Setting

Landform: Mountains in areas dominated by sandstone bedrock; Matewan—mountaintop summits and shoulder slopes; Highsplint—middle and lower south-facing backslopes, footslopes, and coves; Guyandotte—middle and lower north-facing backslopes, footslopes, and coves
Slope range: 35 to 80 percent

Composition

Matewan soil: 35 percent
Highsplint soil: 30 percent
Guyandotte soil: 20 percent
Inclusions: 15 percent

Typical Profile

Matewan
Surface layer:
0 to 0.5 inch—very dark brown, moderately decomposed plant materials
0.5 inch to 4 inches—very dark grayish brown very channery sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown very channery sandy loam

Subsoil:
8 to 30 inches—brownish yellow extremely channery loam

Substratum:
30 to 33 inches—brownish yellow extremely flaggy loam

Bedrock:
33 inches—hard sandstone

Highsplint
Surface layer:
0 to 0.5 inch—moderately decomposed plant materials
0.5 inch to 3 inches—very dark grayish brown channery loam

Subsurface layer:
3 to 6 inches—yellowish brown channery loam

Subsoil:
6 to 41 inches—strong brown very channery loam
41 to 53 inches—yellowish brown extremely channery loam

Substratum:
53 to 65 inches—yellowish brown extremely channery loam

Guyandotte
Surface layer:
0 to 1 inch—moderately decomposed plant materials
1 to 9 inches—black channery loam
9 to 14 inches—very dark grayish brown channery loam

Subsurface layer:
14 to 19 inches—dark yellowish brown very channery loam

Subsoil:
19 to 46 inches—yellowish brown very channery loam
46 to 65 inches—yellowish brown extremely channery sandy loam

Soil Properties and Qualities

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low
Depth to bedrock: 20 to 40 inches

Highsplint
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low or medium
Reaction: In unlimed areas, extremely acid to slightly acid in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Guyandotte
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Medium or high
Reaction: Very strongly acid to neutral in the A horizon and very strongly acid to moderately acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Inclusions

- Berks and Lily soils on ridgetops
- Fiveblock and Kaymine soils in strip-mined areas
- Scattered areas of sandstone rock outcrop
- Small areas where stones or boulders cover more of the soil surface

Use and Management

Most areas of these soils are wooded. Common trees on ridgetops and south-facing side slopes include chestnut oak, scarlet oak, hickory, and white oak. Common trees on north-facing side slopes and in coves include red oak, black oak, American beech, yellow poplar, basswood, and sugar maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been damaged by fire. This map unit is not suited to community development, cultivated crops, hay, or pasture because of the very steep slopes and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- The long, very steep slopes compound problems, such as fire control and the hazard of erosion.

Management considerations:
- Access into the areas with long, very steep slopes is mostly limited to mining roads.
- The fire hazard is greater near the numerous residential developments in the narrow valleys.
- Specialized equipment and management techniques, such as cable yarding, are safer and cause less compaction of the soil.
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.
- Important understory vegetation primarily growing on slopes with cool aspect includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 7s

MnE—Matewan-Latham complex, 25 to 35 percent slopes

Setting

Landform: Mountaintops and ridges adjacent to Wayne County; Matewan—generally on summits; Latham—on saddles

Composition

Matewan soil: 45 percent
Latham soil: 30 percent
Inclusions: 25 percent

Typical Profile

Matewan
Surface layer:
0 to 0.5 inch—very dark brown, moderately decomposed leaf litter
0.5 inch to 4 inches—very dark grayish brown very channery sandy loam

Subsurface layer:
4 to 8—yellowish brown very channery sandy loam

Subsoil:
8 to 30 inches—brownish yellow extremely channery loam

Substratum:
30 to 33 inches—brownish yellow extremely flaggy loam

Bedrock:
33 inches—hard sandstone

Latham
Surface layer:
0 to 4 inches—dark brown silt loam

Subsurface layer:
4 to 7 inches—yellowish brown channery silt loam

Subsoil:
7 to 16 inches—yellowish brown channery silty clay loam
16 to 23 inches—light yellowish brown channery silty clay with light gray mottles
23 to 29 inches—yellowish brown channery silty clay with light gray mottles

Substratum:
29 to 34 inches—yellowish brown channery silty clay with light gray mottles
34 to 44 inches—weathered shale

Soil Properties and Qualities

Matewan
Drainage class: Well drained or somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Steep
Stoniness: Nonstony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low or medium
Depth to bedrock: 20 to 40 inches

Latham
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: High
Slope class: Steep
Stoniness: Nonstony
Natural fertility: Moderate
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Very high
Depth to bedrock: 20 to 40 inches

Inclusions

- Gilpin and Lily soils intermingled with the Matewan soil on similar landforms
- Fiveblock and Kaymine soils in small areas of included strip mines
- A few areas of clayey soils that are deeper to bedrock and less acid in the subsoil

Use and Management

Most areas of these soils are wooded. Common trees include chestnut oak, scarlet oak, hickory, red maple, and white oak. In many areas the trees are of poor quality because they have been damaged by fire. This map unit is not suited to community development, cultivated crops, hay, or pasture because of the steep slopes.

Woodland
Suitability: Moderately suited
Management concerns:
- The long, very steep slopes on the adjacent side slopes limit access to the remote ridgetops of this unit and thus compound the problem of fire control and the hazard of erosion.

Management considerations:
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- Vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.

Interpretive Groups

Land capability classification: 6e

MPF—Matewan-Pineville-Guyandotte association, very steep, extremely stony

Setting

Landform: Mountains that have cool aspects and are dominated by sandstone bedrock; Matewan—mountaintop summits and upper side slopes; Pineville—backslopes and footslopes of mountain flanks and bases; Guyandotte—backslopes and footslopes of mountain flanks and bases and in the upper reaches of coves
Slope range: 35 to 80 percent

Composition

Matewan soil: 35 percent
Pineville soil: 25 percent
Guyandotte soil: 20 percent
Inclusions: 20 percent

Typical Profile

Matewan
Surface layer:
0 to 0.5 inch—very dark brown, moderately decomposed plant material

0.5 inch to 4 inches—very dark grayish brown very channery sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown very channery sandy loam

Subsoil:
8 to 30 inches—brownish yellow extremely channery loam

Substratum:
30 to 33 inches—brownish yellow extremely flaggy loam

Bedrock:
33 inches—hard sandstone

Pineville
Surface layer:
0 to 1 inch—slightly decomposed plant material
1 to 4 inches—dark brown very channery loam

Subsoil:
4 to 47 inches—yellowish brown channery loam
47 to 59 inches—yellowish brown very channery loam

Substratum:
59 to 65 inches—brownish yellow very channery loam with strong brown mottles and black concretions

Guyandotte
Surface layer:
0 to 1 inch—moderately decomposed plant material
1 to 9 inches—black channery loam
9 to 14 inches—very dark grayish brown channery loam

Subsurface layer:
14 to 19 inches—dark yellowish brown very channery loam

Subsoil:
19 to 46 inches—yellowish brown very channery loam
46 to 65 inches—yellowish brown extremely channery sandy loam

Soil Properties and Qualities

Matewan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, extremely acid to moderately acid
Surface runoff: Low
Depth to bedrock: 20 to 40 inches

Pineville
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None

Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low or moderate
Reaction: In unlimed areas, extremely acid to neutral in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: High or medium
Depth to bedrock: More than 60 inches

Guyandotte
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Low to high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Medium or high
Reaction: Very strongly acid to neutral in the A horizon and very strongly acid to moderately acid in the B and C horizons
Surface runoff: Medium or high
Depth to bedrock: More than 60 inches

Inclusions

- Berks soils and scattered areas of rock outcrop on the upper side slopes
- Fiveblock and Kaymine soils in strip-mined areas
- Small areas where stones and boulders cover more of the soil surface

Use and Management

Most areas of these soils are wooded. Common trees on ridgetops and south-facing slopes include chestnut oak, scarlet oak, hickory, and white oak. Common trees on north-facing slopes and in coves include red oak, black oak, American beech, yellow poplar, basswood, and sugar maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been damaged by fire. These soils are not suited to community development, cultivated crops, hay, or pasture because of the very steep slopes and the stones at the soil surface.

Woodland
Suitability: Moderately suited
Management concerns:
- The long, very steep slopes limit access to the remote ridgetops in this unit and thus compound the problem of fire control and the hazard of erosion.
- Access onto the ridgetops is mostly by mining roads.
- The fire hazard is greater near the numerous residential developments in the narrow valleys.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, are safer and cause less compaction of the soil.
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited

Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, whitetail deer, and European wild boar, an introduced species in the northern part of Logan County.
- Important understory vegetation primarily growing on slopes with cool aspect includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 7s

PBF—Pineville-Berks association, very steep, extremely stony

Setting

Landform: Mountains in the southeastern corner of Mingo County; Pineville—middle and lower mountain flanks and bases on backslopes and footslopes and in coves; Berks—summits and shoulders of mountaintops
Slope range: 35 to 80 percent

Composition

Pineville soil: 40 percent
Berks soil: 35 percent
Inclusions: 25 percent

Typical Profile

Pineville
Surface layer:
0 to 1 inch—slightly decomposed plant materials
1 to 4 inches—dark brown very channery loam

Subsoil:
4 to 47 inches—yellowish brown channery loam
47 to 59 inches—brownish yellowish very channery loam

Substratum:
59 to 65 inches—brownish yellow very channery loam with strong brown mottles and black concretions

Berks
Surface layer:
0 to 2 inches—slightly decomposed plant materials
2 to 5 inches—brown channery loam

Subsoil:
5 to 18 inches—yellowish brown very channery silt loam
18 to 22 inches—strong brown extremely channery silt loam

Substratum:
22 to 28 inches—strong brown extremely channery silt loam

Bedrock:
28 inches—rippable, fractured shale

Soil Properties and Qualities

Pineville

Drainage class: Well drained
Permeability: Moderate in the subsoil and moderate or moderately rapid in the substratum
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low or moderate
Reaction: Extremely acid to neutral in the A horizon and extremely acid to strongly acid in the B and C horizons
Surface runoff: High
Depth to bedrock: More than 60 inches

Berks

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Very steep
Stoniness: Extremely stony
Natural fertility: Low
Reaction: In unlimed areas, extremely acid to slightly acid
Surface runoff: Medium or high
Depth to bedrock: 20 to 40 inches

Inclusions

- Matewan, Highsplint, and Guyandotte soils on similar landforms
- Shallow soils on nose slopes and shoulders
- Fiveblock and Kaymine soils in small areas of strip mines
- A few areas where slope is more than 80 percent
- Scattered areas of soils that have more stones or boulders on the soil surface

Use and Management

Most areas of these soils are wooded. Common trees are scarlet oak, red oak, black oak, chestnut oak, white oak, yellow poplar, hickory, beech, basswood, and red maple. In many areas, especially on south-facing slopes, the trees are of poor quality because they have been damaged by fire. These soils are not suited to community development, cultivated crops, hay, or pasture because of the very steep slopes and the stones at the soil surface.

Woodland

Suitability: Moderately suited
Management concerns:

- Limited access to the very steep slopes compounds the problems created by the hazard of erosion and the stones at the soil surface.

Management considerations:
- Specialized equipment and management techniques, such as cable yarding, are safer and cause less soil compaction.
- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.
- Important understory vegetation primarily growing on slopes with cool aspect includes cohosh, snakeroot, ginseng, yellow rot, trillium, mayapple, spring beauty, wild leek, and ferns.

Interpretive Groups

Land capability classification: 7s

PnE—Pineville-Lily complex, 15 to 35 percent slopes, very stony

Setting

Landform: Footslopes and lower hillside benches in the eastern part of the survey area

Composition

Pineville soil: 60 percent
Lily soil: 25 percent
Inclusions: 15 percent

Typical Profile

Pineville
Surface layer:
0 to 1 inch—slightly decomposed organic matter
1 to 4 inches—dark brown very channery loam

Subsurface layer:
4 to 11 inches—yellowish brown channery loam
11 to 21 inches—yellowish brown channery loam
21 to 34 inches—yellowish brown channery loam
34 to 47 inches—yellowish brown channery loam
47 to 59 inches—brownish yellow very channery loam

Substratum:
59 to 65 inches or more—brownish yellow very channery loam with strong brown and black redox concentrations

Lily
Surface layer:
0 to 1 inch—moderately decomposed organic matter
1 to 5 inches—very dark grayish brown loam

Subsurface layer:
5 to 15 inches—yellowish brown channery sandy loam
15 to 24 inches—yellowish brown channery loam

24 to 31 inches—yellowish brown channery loam

Bedrock:
31 inches—moderately hard, fractured, brown sandstone

Soil Properties and Qualities

Pineville
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep or steep
Stoniness: Very stony
Natural fertility: Moderate
Reaction: In unlimed areas, extremely acid to strongly acid
Surface runoff: Very rapid
Depth to bedrock: More than 60 inches

Lily
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep or steep
Stoniness: Very stony
Natural fertility: Low
Reaction: In unlimed areas, extremely acid to strongly acid
Surface runoff: Very rapid
Depth to bedrock: 20 to 40 inches

Inclusions

- Berks and Gilpin soils and Udorthents
- Small areas of soils that have only a 3 to 15 percent content of rock fragments
- A few areas with slopes of less than 15 percent or more than 35 percent

Use and Management

Most areas of this map unit are wooded. Common trees include red oak, white oak, hickory, yellow poplar, and sugar maple. In many areas the trees are of poor quality because they have been repeatedly damaged by fire. The map unit has limited suitability for community development, cultivated crops, hay, or pasture because of the slope and the stones at the soil surface. Most of the cleared areas are used as sites for single-family homes and yards.

Woodland
Suitability: Moderately suited
Management concerns:
- Fire control, limitations affecting harvesting, and the hazard of erosion are major management concerns.

Management considerations:
- Road access onto the remote ridgetops is rare because the adjacent side slopes are long and very steep.

- Laying out access roads and skid trails along the contour, diverting surface water away from roads, and seeding and mulching roads, skid trails, and log landings after use help to control erosion.

Wildlife habitat
Suitability: Moderately suited
Management considerations:
- The vegetation in this map unit provides habitat for grouse, turkey, squirrel, and whitetail deer.

Community development
Suitability: Poorly suited
Management concerns:
- The steep slope is the main limitation of these soils on sites for dwellings.
- The hazard of erosion is very severe in unvegetated areas and is a major management concern.

Management considerations:
- A better suited site should be selected for buildings with and without basements and for septic tank absorption fields; however, selecting an alternative site may not always be practical because of the scarcity of building lots in this rugged survey area.
- If an alternative site is not available, extra care should be taken during the construction of homes to ensure protection from soil slippage.
- The local health department should be consulted about innovative or alternative waste disposal options before systems are installed.
- Once the vegetative cover is removed, immediately establishing a plant cover in the unprotected area and providing for the proper disposal of surface water help to control erosion and sedimentation.
- Removing excess water from around foundation areas with a french drain helps to prevent soil slippage.
- Road access to the benched areas is difficult because of the moderately deep bedrock in areas of the Lily soil.

Interpretive Groups

Land capability classification: 6s

SbB—Sensabaugh loam, 3 to 8 percent slopes

Setting

Landform: Alluvial fans at the mouth of hollows; near the border with Lincoln County in the northwestern part of the survey area

Composition

Sensabaugh soil: 80 percent
Inclusions: 20 percent

Typical Profile

Surface layer:
0 to 8 inches—brown loam

Subsurface layer:
8 to 15 inches—dark yellowish brown loam

Subsoil:
15 to 30 inches—brown gravelly fine sandy loam

30 to 40 inches—brown very gravelly loam

Substratum:
40 to 65 inches—brown very gravelly loam with strong brown mottles

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate
Depth to a seasonal high water table: 4 to 6 feet
Flooding: Rare
Shrink-swell potential: Low
Slope class: Gently sloping
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, moderately acid to moderately alkaline
Surface runoff: Very low to medium
Depth to bedrock: More than 60 inches

Inclusions

- Grigsby and Lobdell soils on flood plains
- A soil that has more gravel in the subsoil and is in similar landscape positions
- Soils with gray mottles in the subsoil; in wet areas
- Urban land and Udorthents in areas that have been smoothed or filled for urban development
- A few low lying areas that are subject to occasional flooding

Use and Management

Most areas have been cleared and are used as sites for housing, yards, gardens, or pasture. A few areas remain in woodland. Common trees are yellow poplar, red oak, scarlet oak, hickory, and black oak. This soil can be used to grow a variety of early and late season garden crops and can be easily tilled over a wide range of moisture content. Late spring frosts are a concern because poor air drainage can produce frost pockets in the narrow valleys. In the small areas used for hay or pasture, working manure or crop residue into the soil helps to maintain fertility and tilth.

Woodland
Suitability: Moderately suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to limit plant competition with native and planted seedlings.

Community development
Suitability: Poorly suited
Management concerns:
- The hazard of flooding in areas of this soil is the main management concern on sites for dwellings and septic tank absorption fields.
- The moderate or moderately rapid permeability of the soil is an additional limitation affecting septic tank absorption fields.

Management considerations:
- Many homes are built on the included upper slopes that are less likely to be flooded.

- Most homes do not have basements and have enough crawl space so that flooding will not reach the first floor.
- A better suited site should be selected.

Interpretive Groups

Land capability classification: 2e

SeB—Sensabaugh-Lobdell loams, 2 to 8 percent slopes

Setting

Landform: Flood plains and alluvial fans in the northern part of the survey area; Sensabaugh—the more sloping areas on alluvial fans and some low terrace treads, mostly at the mouth of drainageways; Lobdell—flood plains closer to streams

Composition

Sensabaugh soil: 45 percent
Lobdell soil: 35 percent
Inclusions: 20 percent

Typical Profile

Sensabaugh
Surface layer:
0 to 6 inches—very dark grayish brown loam
6 to 11 inches—brown gravelly loam

Subsoil:
11 to 40 inches—dark yellowish brown gravelly loam

Substratum:
40 to 55 inches—dark yellowish brown very gravelly loam
55 to 65 inches—dark yellowish brown very gravelly loam with strong brown and pale brown mottles

Lobdell
Surface layer:
0 to 6 inches—brown loam

Subsurface layer:
6 to 20 inches—dark yellowish brown loam

Subsoil:
20 to 38 inches—dark yellowish brown loam with brownish gray mottles

Substratum:
38 to 65 inches—dark yellowish brown silt loam and loam with brownish gray mottles

Soil Properties and Qualities

Sensabaugh
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping

Stoniness: Nonstony
Natural fertility: Medium or high
Reaction: In unlimed areas, moderately acid to neutral
Surface runoff: Very low to medium
Depth to bedrock: More than 60 inches

Lobdell
Drainage class: Moderately well drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: Within a depth of 2.0 to 3.5 feet
Flooding: Occasional
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Nonstony
Natural fertility: Medium or high
Reaction: In unlimed areas, strongly acid to slightly acid in the solum and moderately acid or slightly acid in the substratum
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Yeager soils on streambanks
- Udorthents and Urban land in areas that have been smoothed or filled for urban development
- A few areas that are not subject to flooding

Use and Management

Most areas have been cleared and are used as sites for housing, yards, or gardens. A few areas remain in woodland. Common trees are yellow poplar, red oak, scarlet oak, hickory, and black oak. Other small areas are used for hay or pasture. Growing cover crops and incorporating residue from the cover crop into the soil help to maintain fertility and tilth.

Woodland
Suitability: Moderately suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with native and planted seedlings.

Community development
Suitability: Poorly suited
Management concerns:
- The hazard of flooding in areas of these soils is the main management concern on sites for dwellings and septic tank absorption fields.
- The moderate or moderately rapid permeability in the Sensabaugh soil and the seasonal high water table in the Lobdell soil are additional limitations affecting septic tank absorption fields.

Management considerations:
- Many homes are built on the included upper slopes that are not subject to flooding.
- Most homes do not have basements and have enough crawl space so that flooding will not reach the first floor.
- A better suited site should be selected.

Interpretive Groups

Land capability classification: 2e

Ua—Udorthents, earthen dam

Setting

Landform: Earthen dams, scattered throughout the survey area, used for impounding recreational water (fig. 9) or containing the slurry and other by-products produced by coal cleaning facilities. The dams are constructed of compacted soil and rock fragments borrowed from nearby native soils. The largest of these structures impounds R.D. Bailey Lake on the Guyandotte River, along the border with Wyoming County.
Slope range: 0 to 80 percent

Composition

Udorthents: 95 percent
Inclusions: 5 percent

Typical Profile

The depth, color, and texture of these soils vary greatly. Rock fragments of sandstone, shale, and coal vary widely, both in size and volume. The soils generally have hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 8. Texture is very channery or extremely channery loam or sandy loam.

Soil Properties and Qualities

It is impractical to establish the physical and chemical properties of these soils because the soils vary and are highly disturbed. Some estimates of their properties are as follows:

Figure 9.—A water impoundment structure in an area of Udorthents, earthen dam.

Drainage class: Well drained
Permeability: Very slow
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level to extremely steep
Stoniness: Nonstony to extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, very strongly acid to neutral
Surface runoff: Very high
Depth to bedrock: 10 to 60 inches or more

Inclusions

- Scattered areas of Urban land, mainly streets and parking lots
- A few vertical rock escarpments

Use and Management

These soils are not suited to cultivated crops, hay, pasture, woodland, or community development, although many areas have been seeded to sericea lespedeza or tall fescue. Volunteer trees grow sporadically throughout the map unit. They include sycamore, birch, and yellow poplar. The hazard of erosion and sedimentation are the major management concerns. Establishing a plant cover in unprotected areas and providing for proper disposal of surface water help to control erosion and sedimentation.

Interpretive Groups

Land capability classification: None assigned

Ub—Udorthents, smoothed

Setting

Landform: Disturbed areas created primarily by road construction (fig. 10) or other large-scale earth moving activities, such as mining, utility corridor development, or filling of flood plains.
Slope range: 0 to 80 percent

Composition

Udorthents: 95 percent
Inclusions: 5 percent

Typical Profile

The depth, color, and texture of these soils vary greatly. The rock fragments consist of sandstone, shale, or coal. The size and volume of the fragments vary widely. The soils generally have hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 8. Texture is very channery or extremely channery loam or sandy loam.

Soil Properties and Qualities

It is impractical to establish the physical and chemical properties of these soils because the soils vary and are highly disturbed. Some estimates of their properties are as follows:

Drainage class: Well drained
Permeability: Slow to moderately rapid

Figure 10.—A typical area of Udorthents, smoothed.

Available water capacity: Very low or low
Seasonal high water table: None
Flooding: Generally none; however, newly filled areas along streams may be subject to rare flooding
Shrink-swell potential: Low
Slope class: Nearly level to extremely steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, very strongly acid to neutral
Surface runoff: Very low to very high
Depth to bedrock: 10 to 60 inches or more

Inclusions

- Matewan, Highsplint, and Guyandotte soils in undisturbed areas
- Small areas of Urban land, mainly concrete or asphalt surfaces or structures with roofs
- Small wet or ponded areas

Use and Management

These soils are not suited to cultivated crops, hay, pasture, or woodland. Some areas of these soils have been set aside for future urban development and have not been developed yet. Most areas have been disturbed by highway and other road building activities and then seeded to sericea lespedeza or tall fescue. Trees that naturally invade this unit include yellow poplar, American sycamore, and birch. Erosion and sediment control are the major management concerns, along with the proper disposal of waste if an area is slated for urban development. Establishing a plant cover in unprotected areas and providing for the proper disposal of surface water help to control erosion and sedimentation. Urban development should not be considered unless water and sewer services are available.

Interpretive Groups

Land capability classification: None assigned

UcB—Udorthents-Urban land complex, 0 to 8 percent slopes

Setting

Landform: Built-up areas, mostly in and around major towns and their surrounding communities, with a high density of housing and other urban development; mostly along the Tug Fork of the Big Sandy River in Mingo County and the Guyandotte River in Logan County

Composition

Urban land: 50 percent
Udorthents: 40 percent
Inclusions: 10 percent

Typical Pedon

Urban land

Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as sites for residential, industrial, or commercial development as well as for railways, parks, schoolyards, shopping centers, sewage treatment plants, golf courses, cemeteries, airports, and landfills. Urban land is typically located in and around towns and cities. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Udorthents

The depth, color, and texture of these soils vary greatly. Depth to bedrock ranges from less than 10 to more than 60 inches. The rock fragments consist of sandstone, shale, or coal. The size and volume of the fragments vary widely. The soils generally have hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 8. Texture is very channery or extremely channery loam or sandy loam.

Soil Properties and Qualities

Urban land

Onsite investigation is necessary to determine soil properties in areas of Urban land. Some areas along major streams may be subject to rare flooding during late winter and early spring.

Udorthents

It is impractical to establish the physical and chemical properties of these soils because the soils vary and are highly disturbed. Some estimates of their properties are as follows:

Drainage class: Well drained
Permeability: Slow to moderately rapid
Available water capacity: Very low or low
Seasonal high water table: None
Flooding: Dominantly none; however, rare periods of flooding possible in some of the lowest areas (fig. 11)
Shrink-swell potential: Low
Slope class: Nearly level to extremely steep
Stoniness: Extremely stony
Natural fertility: Very low or low
Reaction: In unlimed areas, very strongly acid to neutral
Surface runoff: Very low to very high
Depth to bedrock: 10 to 60 inches or more

Figure 11.—Typical area of Udorthents-Urban land complex, 0 to 8 percent slopes, in the foreground. Note the floodwall protecting Williamson from flooding.

Inclusions

- Chavies soils on low stream terraces
- Yeager soils along streambanks
- Highsplint soils on footslopes

Use and Management

Most areas of this map unit are used for commercial or residential development or are slated for development. Maintaining existing plant cover, establishing plant cover in unprotected areas, and properly disposing of surface water help to control erosion and sedimentation. Because Udorthents have only a small percentage of natural soil material, they are unsuited to cropland, pasture, hay, and woodland. The areas of included soils are used for parks, lawns, or gardens or as building sites. The soils in the included areas are suited to vegetable and flower gardens, trees, and shrubs.

Interpretive Groups

Land capability classification: None assigned

Ud—Urban land-Chavies complex

Setting

Landform: Low terraces along the Tug Fork of the Big Sandy River in Mingo County, Spruce Fork in Logan County, and a few other major streams scattered throughout the survey area
Slope range: 0 to 3 percent

Composition

Urban land: 45 percent
Chavies soil: 35 percent
Inclusions: 20 percent

Typical Pedon

Urban land

Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as sites for residential, industrial, or commercial development as well as for railways, parks, schoolyards, shopping centers, sewage treatment plants, golf courses, cemeteries, airports, and landfills. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Chavies

Surface layer:
0 to 8 inches—dark brown fine sandy loam

Subsurface layer:
8 to 11 inches—brown fine sandy loam

Subsoil:
11 to 44 inches—dark yellowish brown fine sandy loam

Substratum:
44 to 65 inches—yellowish brown loamy sand

Soil Properties and Qualities

Urban land

Onsite investigation is necessary to determine soil properties in areas of Urban land. Some areas along major streams may be subject to rare flooding during late winter and early spring.

Chavies

Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, very strongly acid to neutral in the A horizon and in the upper part of the B horizon and very strongly acid to moderately acid in the lower part of the B horizon and in the C horizon
Surface runoff: Very low
Depth to bedrock: More than 60 inches

Inclusions

- A few areas of Yeager soils along streambanks
- Craigsville soils at the mouth of small hollows
- Udorthents in areas that have been smoothed or filled for urban development
- A soil that is similar to the Chavies soil but has less clay in the subsoil; in similar landscape positions

Use and Management

Most areas of this map unit are used as homesites or as sites for industrial or commercial development. The Chavies soil is mostly used as sites for yards, gardens, or playgrounds. It is well suited to yards and gardens. A variety of early and late season crops can be grown. Poor air drainage can cause frost pockets in the narrow valleys during late spring. Working crop residue into the soil helps to maintain fertility and good tilth.

Community development
Suitability: Poorly suited
Management concerns:
- The hazard of flooding is the main management concern on sites for dwellings and septic tank absorption fields.

Management considerations:
- Constructing buildings on raised fill material above the normal flood level helps to prevent the damage caused by flooding.
- Most homes do not have basements and have enough crawl space so that flooding will not reach the first floor.
- A better suited site that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: None assigned

Uf—Urban land-Chavies complex, protected

Setting

Landform: Low stream terrace treads and flood plains along the Guyandotte River, downstream of R.D. Bailey Lake
Slope range: 0 to 3 percent

Composition

Urban land: 45 percent
Chavies soil: 30 percent
Inclusions: 25 percent

Typical Pedon

Urban land
Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as sites for residential, industrial, or commercial development as well as for railways, parks, schoolyards, shopping centers, sewage treatment plants, golf courses, cemeteries, airports, and landfills. The areas of Urban land are largely protected from flooding and are heavily used and densely populated. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Chavies
Surface layer:
0 to 8 inches—dark brown fine sandy loam

Subsurface layer:
8 to 11 inches—brown fine sandy loam

Subsoil:
11 to 44 inches—dark yellowish brown fine sandy loam

Substratum:
44 to 65 inches—yellowish brown loamy sand

Soil Properties and Qualities

Urban land
Onsite investigation is necessary to determine soil properties in areas of Urban land.

Chavies
Drainage class: Well drained

Permeability: Moderately rapid
Available water capacity: Moderate or high
Seasonal high water table: None
Flooding: None
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Medium
Reaction: In unlimed areas, very strongly acid to neutral in the A horizon and in the upper part of the B horizon and very strongly acid to moderately acid in the lower part of the B horizon and in the C horizon
Surface runoff: Very low
Depth to bedrock: More than 60 inches

Inclusions

- Grigsby soils on floodplains
- Yeager soils along streambanks
- Craigsville soils at the mouth of small hollows along the remaining undisturbed streams
- Udorthents in areas that have been smoothed or filled for urban development
- A soil that is similar to the Chavies soil but has less clay in the subsoil; on low stream terraces

Use and Management

Most areas of this map unit are used as residential, commercial, or industrial sites. The Chavies soil is in unevenly distributed areas and is used for yards, gardens, small fields, or playgrounds. It is well suited to yards and gardens. A variety of early and late season crops can be grown. Poor air drainage can cause frost pockets in the narrow valleys during late spring. Growing cover crops and working crop residue into the soil help to maintain fertility and good tilth.

Community development
Suitability: Well suited
Management concerns:
- This map unit has no limitations affecting dwellings.
- The moderately rapid permeability in the subsoil of the Chavies soil is a limitation affecting septic tank absorption fields.

Management considerations:
- This map unit is protected by a major flood-control structure.
- Although unlikely, flooding is possible if the control structure should fail or if storms exceed the design capacity of the structure.
- Establishing a plant cover in disturbed areas and providing for proper disposal of surface water help to control erosion and sedimentation.

Interpretive Groups

Land capability classification: None assigned

UkB—Urban land-Kanawha complex, 0 to 8 percent slopes

Setting

Landform: Flood plains and low terrace treads along the Tug Fork of the Big Sandy River in Mingo County and some secondary streams along the Guyandotte River

Composition

Urban land: 45 percent
Kanawha soil: 35 percent
Inclusions: 20 percent

Typical Pedon

Urban land

Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as a site for residential, industrial, or commercial development as well as for railways, parks, schoolyards, shopping centers, sewage treatment plants, golf courses, cemeteries, airports, and landfills. Urban land is typically located in and around towns and cities. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Kanawha

Surface layer:
0 to 9 inches—dark brown loam

Subsoil:
9 to 25 inches—strong brown clay loam
25 to 40 inches—yellowish brown clay loam
40 to 47 inches—yellowish brown sandy loam

Substratum:
47 to 65 inches—yellowish brown and strong brown stratified loamy sand and sandy loam

Soil Properties and Qualities

Urban land

Onsite investigation is necessary to determine soil properties in areas of Urban land.

Kanawha

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: None
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Nonstony
Natural fertility: High
Reaction: In unlimed areas, strongly acid or moderately acid in the upper part of the solum and moderately acid or slightly acid in the lower part of the solum and in the substratum
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Yeager and Grigsby soils along streambanks
- Craigsville and Sensabaugh soils at the mouth of small hollows
- Udorthents in areas that have been smoothed or filled and used for urban development

Use and Management

Most areas of this map unit are covered with asphalt, concrete, or gravel surfaces or by structures with roofs. They are used as sites for residential, industrial, or

commercial development. The Kanawha soil is in areas that have not been disturbed, such as yards, gardens, small fields, or pastures. It is well suited to yards and gardens. A variety of early and late season crops may be grown. Poor air drainage can cause frost pockets in the narrow valleys during late spring. Growing a cover crop and incorporating residue from the cover crop into the soil help to maintain fertility and tilth.

Community development
Suitability: Poorly suited
Management concerns:
- The hazard of flooding is the main management concern on sites for dwellings and septic tank absorption fields.

Management considerations:
- Constructing buildings on raised fill material above the normal flood level helps to prevent the damage caused by flooding.
- Most homes do not have basements and have enough crawl space so that flooding will not reach the first floor.
- A better suited site that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: None assigned

UnB—Urban land-Kanawha complex, 0 to 8 percent slopes, protected

Setting

Landform: Flood plains and low stream terraces along the Guyandotte River, downstream from R.D. Bailey Lake

Composition

Urban land: 45
Kanawha soil: 35 percent
Inclusions: 20 percent

Typical Pedon

Urban land
Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as a site for residential, industrial, or commercial development as well as for railways, parks, schoolyards, shopping centers, sewage treatment plants, golf courses, cemeteries, airports, and landfills. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Kanawha
Surface layer:
0 to 9 inches—dark brown loam

Subsoil:
9 to 25 inches—strong brown clay loam
25 to 40 inches—yellowish brown clay loam
40 to 47 inches—yellowish brown sandy loam

Substratum:
47 to 65 inches—yellowish brown and strong brown stratified loamy sand and sandy loam

Soil Properties and Qualities

Urban land
Onsite investigation is necessary to determine soil properties in areas of Urban land.

Kanawha
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: None
Flooding: Very rare
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Nonstony
Natural fertility: High
Reaction: In unlimed areas, strongly acid or moderately acid in the upper part of the solum and moderately acid or slightly acid in the lower part of the solum and in the substratum
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Grigsby soils along streambanks
- Sensabaugh soils at the mouth of small hollows
- Udorthents in a few areas that have been smoothed or filled for urban development

Use and Management

Most areas of this map unit are covered with asphalt or concrete or by structures with roofs. They are used as sites for residential, industrial, or commercial development. The Kanawha soil is in areas that have not been disturbed, such as yards, gardens, playgrounds, or small fields. It is well suited to yards and gardens. A variety of early and late season crops may be grown. Poor air drainage can cause frost pockets in the narrow valleys during late spring. Growing a cover crop and incorporating crop residue into the soil help to maintain fertility and tilth.

Community development
Suitability: Well suited
Management considerations:
- This map unit is protected by a major flood-control structure.
- Although unlikely, flooding is possible if the control structure should fail or if storms exceed the design capacity of the structure.
- Establishing a plant cover in disturbed areas and providing for proper disposal of surface water help to control erosion and sedimentation.

Interpretive Groups

Land capability classification: None assigned

UtB—Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes

Setting

Landform: Flood plains and low terrace treads along the Tug Fork of the Big Sandy River in Mingo County and some secondary streams adjacent to Wayne County

Composition

Urban land: 35 percent
Kanawha soil: 30 percent
Cotaco soil: 25 percent
Inclusions: 10 percent

Typical Pedon

Urban land

Urban land consists of areas covered by concrete, asphalt, or gravel surfaces or by structures with roofs. It is used as a site for residential, industrial, or commercial development as well as for railways, parking lots, parks, and cemeteries. Because the soil material in areas of Urban land varies greatly, a typical pedon is not given.

Kanawha

Surface layer:
0 to 9 inches—dark brown loam

Subsoil:
9 to 25 inches—strong brown clay loam
25 to 40 inches—yellowish brown clay loam
40 to 47 inches—yellowish brown sandy loam

Substratum:
47 to 65 inches—yellowish brown and strong brown stratified loamy sand and sandy loam

Cotaco

Surface layer:
0 to 8 inches—brown loam

Subsurface layer:
8 to 12 inches—yellowish brown loam

Subsoil:
12 to 17 inches—yellowish brown loam with pale brown and yellowish brown mottles
17 to 28 inches—brownish yellow clay loam with light gray mottles
28 to 39 inches—mottled brownish yellow and light gray clay loam

Substratum:
39 to 50 inches—mottled brownish yellow and light gray loam
50 to 65 inches—mottled brownish yellow and light gray channery loam

Soil Properties and Qualities

Urban land

Onsite investigation is necessary to determine soil properties in areas of Urban land.

Kanawha

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Seasonal high water table: None
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Nonstony
Natural fertility: High

Reaction: In unlimed areas, strongly acid or moderately acid in the upper part of the solum and moderately acid or slightly acid in the lower part of the solum and in the substratum
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Cotaco
Drainage class: Moderately well drained
Permeability: Moderate
Available water capacity: High
Depth to a seasonal high water table: 1.5 to 2.5 feet
Flooding: Rare
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Stoniness: Nonstony
Natural fertility: Moderate
Reaction: In unlimed areas, extremely acid to strongly acid
Surface runoff: Low or medium
Depth to bedrock: More than 60 inches

Inclusions

- Yeager and Grigsby soils along streambanks
- Craigsville and Sensabaugh soils at the mouth of small hollows
- Udorthents in a few scattered areas that have been smoothed or filled for urban development

Use and Management

Most areas of this map unit are used as sites for residential, industrial, or commercial development. The Kanawha soil is in areas that have not been disturbed, such as yards, gardens, or playgrounds. It is well suited to gardens, and a wide variety of early and late season crops may be grown. Poor air drainage can cause frost pockets in the narrow valleys during late spring. Growing a cover crop and incorporating residue from the cover crop into the soil help to maintain fertility and good tilth. The moderately well drained Cotaco soil dries out more slowly in spring and may require ditching or a drainage system to reliably produce crops.

Community development
Suitability: Poorly suited
Management concerns:
- The hazard of flooding is the main management concern on sites for dwellings and septic tank absorption fields.

Management considerations:
- Constructing buildings on raised fill material above the normal flood level helps to prevent the damage caused by flooding.
- Most homes do not have basements and have enough crawl space so that flooding will not reach the first floor.
- A better suited site that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: None assigned

W—Water

This map unit consists of bodies of water, mainly R.D. Bailey Lake in Mingo County, the Guyandotte River in Mingo and Logan Counties, the Tug Fork of the Big Sandy

River in Mingo County, and small bodies of water scattered throughout the survey area.

R.D. Bailey Lake accounts for 150 acres of water. The Guyandotte River, the Tug Fork of the Big Sandy Lake, and small lakes and sediment ponds make up the remaining acreage of this map unit.

No interpretations are given for this map unit.

Ye—Yeager fine sandy loam

Setting

Landform: Flood plains along the Tug Fork in Mingo County and the Guyandotte River and Spruce Fork in Logan County
Slope range: 0 to 3 percent

Composition

Yeager soil: 75 percent
Inclusions: 25 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown fine sandy loam

Substratum:
4 to 12 inches—brown fine sandy loam with stratified layers of black fine sandy loam
12 to 26 inches—yellowish brown loamy sand with stratified layers of black loamy sand
26 to 65 inches—yellowish brown sand stratified with layers of black sand

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid or rapid
Available water capacity: Low
Seasonal high water table: None
Flooding: Occasional
Shrink-swell potential: Low
Slope class: Nearly level
Stoniness: Nonstony
Natural fertility: Low
Reaction: In unlimed areas, very strongly acid to neutral
Surface runoff: Negligible to low
Depth to bedrock: More than 60 inches

Inclusions

- Grigsby soils in the higher areas of flood plains
- Craigsville soils at the mouth of hollows
- Chavies soils on low stream terraces
- Udorthents in areas that have been smoothed or filled for urban development

Use and Management

Most areas of this Yeager soil have reverted to woodland. Common trees are yellow poplar, American sycamore, river birch, locust, box elder, and pawpaw. Some small areas are used as hayland or garden plots. A variety of early and late season crops can be grown. The soil is easily tilled and can be worked throughout a wide

range in moisture content. Poor air drainage can cause frost pockets in the narrow valleys during late spring. The soil may not have sufficient water-holding capacity for some crops during dry years. Crops are subject to damage from flooding, although most flooding occurs during winter and early spring. Growing a cover crop and incorporating crop residue from the cover crop into the soil help to maintain fertility and tilth.

Woodland
Suitability: Moderately suited
Management concerns:
- Plant competition is a major management concern.

Management considerations:
- Intensive management is needed to keep undesirable plants from competing with native plants and seedlings.

Community development
Suitability: Unsuited
Management concerns:
- The hazard of flooding is the main limitation of this soil as a site for dwellings and septic tank absorption fields.
- The moderately rapid or rapid permeability further limits this soil as a site for septic tank absorption fields.

Management considerations:
- A better suited site that is protected from flooding should be selected.

Interpretive Groups

Land capability classification: 2w

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of map units in this survey is given in the section "Detailed Soil Map Units" and in the yields table.

Prime Farmland

In an effort to identify the extent and location of prime farmland, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those

needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 8,360 acres in the survey area, or less than 1 percent of the total acreage, meets the soil requirements for prime farmland. This acreage is along the major rivers and their tributaries in the Urban land-Udorthents-Craigsville general soil map unit. Only a very small portion of the acreage is used for crops, with most of the acreage used as woodland or meadow or for home gardens.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

The map units that meet the requirements for prime farmland are:

AbB Allegheny loam, 3 to 8 percent slopes
Ch Chavies fine sandy loam
Ck Chavies fine sandy loam, protected
Gw Grigsby loam
SbB Sensabaugh loam, 3 to 8 percent slopes
SeB Sensabaugh-Lobdell loams, 2 to 8 percent slopes

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Tables 6a, 6b, and 6c show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content

of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of

sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forest Productivity and Management

Barbara McWhorter, state forester, Natural Resources Conservation Service, helped to prepare this section.

About 248,000 acres in Logan County and more than 230,000 acres in Mingo County are used as woodland (Griffith and Widmann 2003). This acreage constitutes approximately 85 percent of the total land area in these two counties (fig. 12). The majority of the woodland acreage in the counties is owned by corporations—63 percent in Logan and 73 percent in Mingo. More than 20 percent of the woodland acreage is owned by individuals. The remaining acreage is owned by forest industries, county governments, or municipalities.

Oak-hickory is by far the most common forest type, or natural association of tree species, covering nearly 80 percent of the land area. Northern hardwoods (beech-birch-maple) cover about 20 percent of the land area.

About 90 percent of the woodland acreage is classified as sawtimber size (11 inches diameter breast height) or larger. The remainder of the wooded acreage is comprised of relatively equal amounts of poletimber (more than 5 inches diameter breast height but less than sawtimber size) or sapling and seedling sized trees. The majority of the acreage is moderately stocked to fully stocked.

The woodland tracts range in size from small, farm woodlots to large, corporate-owned woodlands. Forests and their management are important to the economy of this area. A large portion of harvested timber is exported out of the survey area in log form, to become part of value-added economies in other counties, states, or countries (West Virginia Bureau of Commerce 1997). Harvested logs are utilized for many purposes, ranging from fine veneer to pulp for paper. The recent establishment of oriented strand board plants has increased the utilization of smaller and poorly formed trees and tops, increasing the silvicultural and marketing possibilities for forest management.

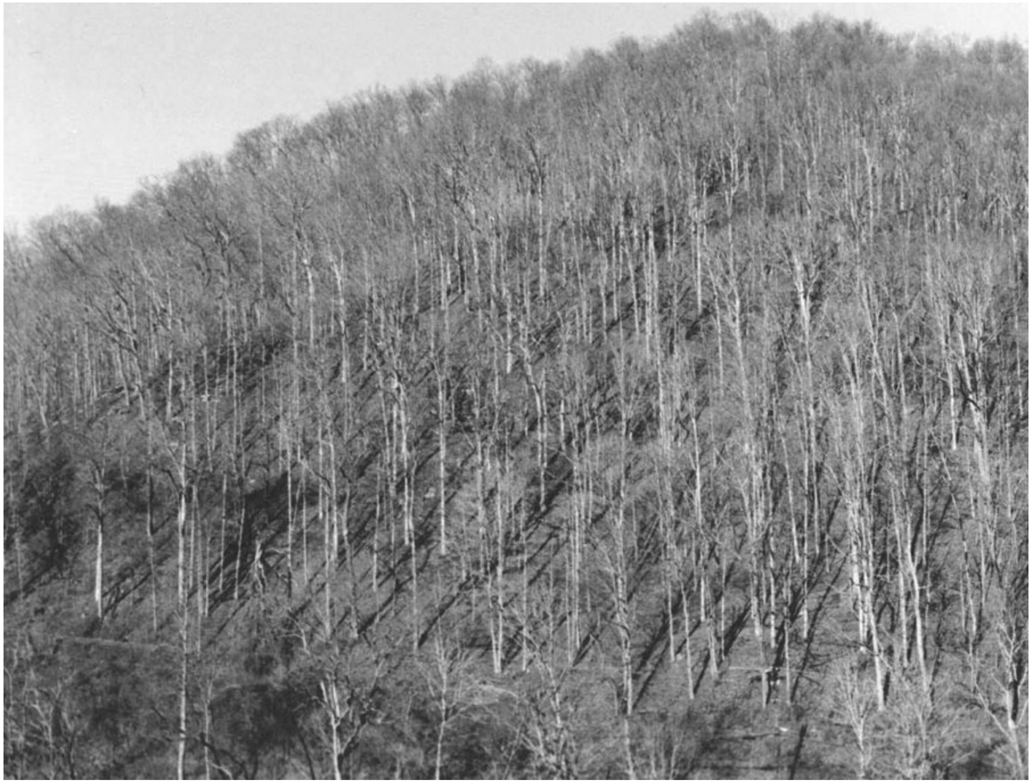


Figure 12.—A stand of white oak on a west-facing slope.

Wildfires occur frequently in the survey area. While the fires may not kill the trees instantly, fire scars can lead to rot, decay, and reduced timber quality and quantity in later years. Loss of the leaf litter can also lead to increased soil erosion after wildfire events.

Soil properties have a strong influence on tree species, tree growth, and woodland management. The soil depth and texture, for example, affect the available water capacity, which influences the occurrence of a species and the rate of growth. Other features, such as slope, stoniness or rockiness, or the presence of a clay subsoil, influence the kinds of management needed. Aspect, or the direction a slope faces, also affects tree growth and management along with cutting (silvicultural) history, insect and disease occurrence, and fire events.

The tables in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forest management.

Forest Productivity

In table 7, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forest Management

In tables 8a through 8e, interpretive ratings are given for various aspects of forest management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the

soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water

capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreation

Alan Boone, district conservationist, Natural Resources Conservation Service, helped to prepare this section.

Logan and Mingo Counties offer many outdoor recreational opportunities. The Guyandotte River and Tug Fork and their tributaries provide excellent fishing for smallmouth bass and catfish. Laurel Lake, Rockhouse Lake, and the tailwaters of R.D. Bailey Dam are stocked with trout during the spring months by the West Virginia Division of Natural Resources.

Unique hunting seasons in Logan and Mingo Counties allow archery hunting only for deer. Some of the largest trophy deer in the state come from these counties. Wild boar hunting is allowed in Logan County in the Rockhouse wild boar management area and on large tracts of company-owned land.

The Hatfield-McCoy Trail System, a multicounty, off-road, all-terrain-vehicle trail has received nationwide recognition.

The soils of the survey area are rated in tables 9a and 9b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 9a and 9b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope,

stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and

abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control

structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Hydric Soils

In this section, hydric soils are defined and described. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others 1979; U.S. Army Corps of Engineers 1987; National Research Council 1995; Tiner 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff 2003) and in the “Soil Survey Manual” (Soil Survey Division Staff 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt, Whited, and Pringle 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions

observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

There are no hydric soils mapped in this survey as major or minor components.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction,

and maintenance. Tables 11a and 11b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred

from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 12a and 12b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 13a and 13b give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13a, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 15 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In table 16, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In table 16, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 16, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other

soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates *saturated hydraulic conductivity* (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors

being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable cations that can be held by the soil, expressed in terms of milliquivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable cations plus aluminum expressed in terms of milliquivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by

laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under

normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 20 and the results of chemical analysis in table 21. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section “Soil Series and Their Morphology.” Soil samples were analyzed by Soil Survey Laboratory, National Soil Survey Center, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA 1996).

Coarse materials—(2- to 75-millimeter fraction) weight estimates of the percentages of all material less than 75 millimeters (3B1).
Sand—(0.05- to 2.0-millimeter fraction) weight percentages of material less than 2 millimeters (3A1).
Silt—(0.002- to 0.05-millimeter fraction) pipette extraction, weight percentages of all material less than 2 millimeters (3A1).
Clay—(fraction less than 0.002 millimeter) pipette extraction, weight percentages of material less than 2 millimeters (3A1).
Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).
Extractable cations—ammonium acetate pH 7.0, ICP; calcium (6N2e, 6N2f), magnesium (6O2d, 6O2e), sodium (6P2b, 6P2c), potassium (6Q2b, 6Q2c).
Extractable acidity—barium chloride-triethanolamine IV (6H5a).
Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).
Cation-exchange capacity—sum of cations (5A3a).
Effective cation-exchange capacity—sum of extractable cations plus aluminum (5A3b).
Reaction (pH)—1:1 water dilution (8C1f).
Base saturation—ammonium acetate, pH 7.0 (5C1).
Base saturation—sum of cations, TEA, pH 8.2 (5C3).
Aluminum—potassium chloride extraction, inductively coupled plasma spectrometry I (6G9b).
Aluminum saturation—bases plus aluminum (5G1).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff 1999, 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 22 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Inceptisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udept (*Ud*, meaning humid, plus *ept*, from Inceptisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Dystrudepts (*Dystr*, meaning infertile, plus *udept*, the suborder of the Inceptisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Dystrudepts.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, active, mesic Typic Dystrudepts.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each

series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff 2003). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Allegheny Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: River valleys
Landform: Stream terraces
Parent material: Loamy alluvium
Slope range: 3 to 8 percent

Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Allegheny loam, 3 to 8 percent slopes, in Mingo County, on a wooded stream terrace near the mouth of Mullens Branch; about 500 feet west of the Buchannon Cemetery and 1.15 miles southeast of the confluence of Ben Creek and the Tug Fork of the Big Sandy River, about 0.5 mile west of War Eagle; USGS Wharncliffe topographic quadrangle; lat. 37 degrees 31 minutes 49 seconds N. and long. 81 degrees 57 minutes 15 seconds W.

Ap1—0 to 6 inches; very dark gray (10YR 3/1) loam; moderate very fine granular structure; very friable; many fine and coarse roots; 5 percent sandstone gravel; very strongly acid; abrupt smooth boundary.

Ap2—6 to 10 inches; dark brown (10YR 4/3) loam; weak fine subangular blocky structure; very friable; many fine and coarse roots; 5 percent sandstone gravel; very strongly acid; abrupt wavy boundary.

BA—10 to 14 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; very friable; common medium and coarse roots; 5 percent sandstone gravel; very strongly acid; clear wavy boundary.

Bt1—14 to 29 inches; yellowish brown (10YR 5/6) gravelly loam; moderate medium subangular blocky structure; friable; common medium roots; common continuous clay films; 20 percent sandstone gravel and 2 percent sandstone cobbles; very strongly acid; clear wavy boundary.

Bt2—29 to 45 inches; yellowish brown (10YR 5/6) gravelly loam; moderate medium subangular blocky structure; friable; few fine roots; common continuous clay films; 20 percent sandstone gravel and 5 percent sandstone cobbles; very strongly acid; gradual wavy boundary.

BC—45 to 60 inches; strong brown (7.5YR 5/8) gravelly loam; weak coarse subangular blocky structure; friable; few fine and very fine roots; 15 percent sandstone gravel; very strongly acid; gradual wavy boundary.

C1—60 to 66 inches; mixed strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), and brownish yellow (10YR 6/6) gravelly sandy clay loam; massive; friable; 20 percent sandstone gravel and 2 percent sandstone cobbles; very strongly acid; gradual wavy boundary.

C2—66 to 80 inches; strong brown (7.5YR 5/6) gravelly sandy clay loam; massive; friable; common medium prominent pinkish gray (7.5YR 7/2) iron depletions;

common medium prominent black (N 2.5/0) manganese concretions; 15 percent sandstone gravel; very strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 72 inches
Depth to bedrock: More than 65 inches
Reaction: In unlimed areas, strongly acid to extremely acid
Content of rock fragments: Less than 15 percent in the surface layer and 0 to 35 percent in the subsoil and substratum

A or Ap horizon:
Hue—7.5YR to 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture of the fine-earth fraction—loam

BA horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of the fine-earth fraction—sandy loam, loam, or silt loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—4 or 5
Chroma—3 to 8
Texture of the fine-earth fraction—clay loam, sandy clay loam, loam, fine sandy loam, or silt loam

BC horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of the fine-earth fraction—fine sandy loam, loam, sandy clay loam, or clay loam

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of the fine-earth fraction—fine sandy loam, loam, sandy loam, sandy clay loam, or clay loam

Berks Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Hills
Landform: Ridges and upper side slopes
Parent material: Residuum
Slope range: 35 to 120 percent

Taxonomic classification: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Berks channery loam, in Mingo County, on a wooded side slope in an area of Pineville-Berks association, very steep, extremely stony; about 500 feet east of Isaban Mount Road (County Highway 13) and 0.1 mile east of the confluence of Gilbert Creek and Adams Fork, about 4 miles southwest of Gilbert; USGS Wharncliffe topographic quadrangle; lat. 37 degrees 36 minutes 18 seconds N. and long. 81 degrees 54 minutes 57 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material; abrupt smooth boundary.
A—2 to 5 inches; brown (10YR 4/3) channery loam; weak fine granular structure; very friable; many fine and medium roots; 20 percent shale channers; very strongly acid; clear wavy boundary.
Bw1—5 to 18 inches; yellowish brown (10YR 5/4) extremely channery silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; 70 percent shale channers; strongly acid; clear wavy boundary.
Bw2—18 to 22 inches; strong brown (7.5YR 5/6) extremely channery silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; 70 percent shale channers; strongly acid; clear wavy boundary.
C—22 to 28 inches; strong brown (7.5YR 5/6) extremely channery silt loam; relict rock structure; friable; few very fine roots; 85 percent shale channers; moderately acid; abrupt wavy boundary.
Cr—28 to 38 inches; fractured shale.

Range in Characteristics

Thickness of the solum: 12 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: In unlimed areas, extremely acid to slightly acid
Kind and content of rock fragments: Shale and siltstone with some fine grained sandstone; fragments make up 10 to 50 percent of the A horizon, 15 to 75 percent of the B horizon, and 35 to 90 percent of the C horizon

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—loam or silt loam

BA and Bw horizons:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, silt loam, or silty clay loam

C horizon:
Hue—7.5YR to 2.5YR
Value—4 to 6
Chroma—2 to 8
Texture—loam or silt loam

Cedarcreek Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid

Landscape: Hills
Landform: Reclaimed land on hillslopes and ridges
Parent material: Mine spoil
Slope range: 0 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents

Typical Pedon

Cedarcreek very channery loam, in McDowell County, in an area of Kaymine-Cedarcreek-Dekalb complex, very steep, extremely stony, on a wooded and reclaimed strip mine; about 0.38 mile west of Keystone; USGS Keystone topographic quadrangle; lat. 37 degrees 24 minutes 53 seconds N. and long. 81 degrees 27 minutes 28 seconds W.

A—0 to 2 inches; brown (10YR 4/3) very channery loam; weak medium subangular blocky structure parting to moderate fine granular; friable; many fine and very fine roots; 50 percent channers, flagstones, and stones (60 percent siltstone, 30 percent shale, and 10 percent sandstone); strongly acid; clear wavy boundary.

C1—2 to 16 inches; grayish brown (2.5Y 5/2) very channery loam; massive; friable; common fine and very fine roots; 55 percent channers, flagstones, and stones (55 percent siltstone, 30 percent shale, and 15 percent sandstone); very strongly acid; clear wavy boundary.

C2—16 to 38 inches; grayish brown (2.5Y 5/2) extremely channery loam; massive; friable; 70 percent channers, flagstones, and stones (50 percent siltstone, 35 percent sandstone, and 15 percent shale); very strongly acid; clear wavy boundary.

C3—38 to 65 inches; yellowish brown (10YR 5/4) extremely channery loam; massive; firm; 65 percent channers, flagstones, and stones (50 percent sandstone, 40 percent siltstone, and 10 percent shale); very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, extremely acid to strongly acid
Content and kind of rock fragments: 35 to 80 percent throughout the profile; sandstone, siltstone, shale, and coal, each make up less than 65 percent of the total
Fine-earth fraction: Averages between 18 and 27 percent clay
Note: In some pedons, the A horizon was formed by stockpiling natural surficial soil and later spreading the stockpiled material over the land surface. In these pedons, the horizon is 4 to 20 inches thick and contains 10 to 35 percent channers.

A horizon:
Hue—7.5YR to 2.5Y or is neutral
Value—2 to 5
Chroma—0 to 6
Texture of the fine-earth fraction—loam, silt loam, or sandy loam

C horizon:
Hue—7.5YR to 2.5Y or is neutral
Value—2 to 6
Chroma—0 to 8
Texture of the fine-earth fraction—dominantly loam or silt loam; may include stratified layers of sandy loam

Chavies Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landscape: Alluvial plains
Landform: Toeslopes
Parent material: Coarse textured alluvium
Slope range: 0 to 3 percent

Taxonomic classification: Coarse-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Chavies fine sandy loam, in Logan County, in an area of Chavies fine sandy loam, protected, in a meadow on a low stream terrace along the south shore of the Guyandotte River; about 175 feet southwest of the east end of the runway at McDonald Airport and about 0.4 mile northwest of Taplin; USGS Logan topographic quadrangle; lat. 37 degrees 45 minutes 41 seconds N. and long. 81 degrees 54 minutes 13 seconds W.

A—0 to 2 inches; dark brown (10YR 3/3) fine sandy loam; moderate medium granular structure; friable; many fine and medium roots; 2 percent sandstone gravel; strongly acid; abrupt smooth boundary.
Ap—2 to 8 inches; dark brown (10YR 3/3) fine sandy loam; weak medium subangular blocky structure; friable; many fine and medium roots; 7 percent sandstone gravel; very strongly acid; abrupt smooth boundary.
BA—8 to 11 inches; brown (10YR 4/3) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.
Bt1—11 to 25 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds and in pores; 7 percent sandstone gravel; moderately acid; clear wavy boundary.
Bt2—25 to 32 inches; dark yellowish brown (10YR 4/6) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds and in pores; 7 percent sandstone gravel; strongly acid; clear wavy boundary.
BC—32 to 44 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak coarse subangular blocky structure; very friable; moderately few fine and very fine roots; 5 percent sandstone gravel; strongly acid; gradual wavy boundary.
C—44 to 65 inches; yellowish brown (10YR 5/6) loamy sand; single grained; loose; 7 percent sandstone gravel; moderately acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, very strongly acid to neutral in the A and BA horizons and in the upper part of the Bt horizon and very strongly acid to moderately acid in the lower part of the Bt horizon and in the C horizon
Kind and content of rock fragments: Sandstone or quartz gravel makes up 0 to 15 percent of the solum and 0 to 30 percent of the substratum

A horizon:
Hue—10YR or 7.5YR
Value—3 to 5
Chroma—2 to 4
Texture—fine sandy loam, loam, or loamy sand

BA, Bt, and BC horizons:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—fine sandy loam or loam

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—fine sandy loam, sandy loam, loamy sand, or loam

Cloverlick Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Hills
Landform: Middle and lower backslopes, footslopes, and coves with cool aspects
Parent material: Colluvium from Pennsylvanian clastics
Slope range: 35 to 65 percent

Taxonomic classification: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Cloverlick loam, in Lincoln County, in an area of Highsplint-Matewan-Cloverlick association, very steep, extremely stony, on a north-facing side slope, about 250 feet south of Bear Branch; 1.25 miles west-southwest of Woodville and 0.75 mile south-southeast of Alkol; USGS Griffithsville topographic quadrangle; lat. 38 degrees 09 minutes 18 seconds N. and long. 81 degrees 54 minutes 24 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material; abrupt smooth boundary.
A—2 to 9 inches; very dark grayish brown (10YR 3/2) loam; brown (10YR 5/3) dry; weak fine granular structure; very friable; many fine and medium roots; 10 percent sandstone and siltstone channers; slightly acid; clear smooth boundary.
BA—9 to 13 inches; dark yellowish brown (10YR 4/4) and dark brown (10YR 3/3) channery loam; weak fine and medium subangular blocky structure; very friable; many fine and medium roots; 20 percent sandstone and siltstone channers; slightly acid; gradual smooth boundary.
Bw1—13 to 29 inches; yellowish brown (10YR 5/4) very channery loam; weak medium subangular blocky structure; friable; common fine and medium roots; 35 percent sandstone and siltstone channers; slightly acid; gradual smooth boundary.
Bw2—29 to 45 inches; brown (10YR 5/3) very channery loam; weak medium subangular blocky structure; friable; few fine and medium roots; 50 percent sandstone and siltstone channers; very strongly acid; gradual smooth boundary.
Bw3—45 to 50 inches; brown (10YR 5/3) extremely channery silt loam; weak medium subangular blocky structure; friable; few fine roots; 60 percent sandstone and siltstone channers; very strongly acid; clear smooth boundary.
C—50 to 65 inches; yellowish brown (10YR 5/4) extremely channery loam; massive; very friable; 70 percent sandstone and siltstone channers; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches

Reaction: In unlimed areas, slightly acid to extremely acid in the A and BA horizons and in the upper part of the Bw horizon and strongly acid to extremely acid in the lower part of the Bw horizon and in the C horizon
Content of rock fragments: 20 to 40 percent in the A and BA horizons, 25 to 70 percent in the Bw horizon, and 40 to 75 percent in the C horizon

A horizon (moist and dry):
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or silt loam

BA horizon:
Hue—10YR
Value—3 to 6
Chroma—2 to 4
Texture—loam or silt loam

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam or silt loam

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—fine sandy loam or loam

Cotaco Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Low stream terraces that merge with high flood plains
Parent material: Medium textured alluvium
Slope range: 0 to 8 percent

Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Aquic Hapludults

Typical Pedon

Cotaco loam, in Wayne County, in an area of Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes, in a pasture; about 500 feet northeast of Buffalo Creek and about 3.9 miles south of the confluence of Buffalo Creek and Twelvepole Creek; about 0.8 mile northwest of Mills Chapel; USGS Burnaugh topographic quadrangle; lat. 38 degrees 17 minutes 53 seconds N. and long. 82 degrees 30 minutes 32 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3 and 5/3) loam; moderate fine and medium granular structure; very friable; many fine and medium roots; slightly alkaline; abrupt smooth boundary.
BA—8 to 12 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; slightly alkaline; abrupt smooth boundary.
Bt1—12 to 17 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common faint clay films

on faces of peds; common faint pale brown (10YR 6/3) and common distinct yellowish brown (10YR 5/6) soft iron masses; moderately acid; clear wavy boundary.

Bt2—17 to 28 inches; brownish yellow (10YR 6/6) clay loam; weak medium subangular blocky structure; friable; few fine roots; common manganese concretions; common faint clay films on faces of peds; many medium prominent light gray (10YR 7/2) iron depletions; strongly acid; gradual wavy boundary.

BC—28 to 39 inches; variegated brownish yellow (10YR 6/6) and light gray (10YR 7/2) clay loam; weak medium prismatic structure parting to weak coarse subangular blocky; friable; few fine roots; common manganese coatings on faces of peds; strongly acid; gradual wavy boundary.

C1—39 to 50 inches; variegated brownish yellow (10YR 6/6) and light gray (10YR 7/1) loam; massive; friable; 5 percent rock fragments; strongly acid; gradual wavy boundary.

C2—50 to 65 inches; variegated brownish yellow (10YR 6/6) and light gray (10YR 7/1) channery loam; massive; friable; many manganese concretions in the matrix; 15 percent rock fragments; strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, strongly acid or moderately acid in the upper part of the solum and moderately acid or slightly acid in the lower part of the solum and in the substratum
Content of rock fragments: 0 to 15 percent in the Ap horizon, 0 to 20 percent in individual subhorizons of the B horizon, and 0 to 60 percent in the C horizon

Ap horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—loam

BA horizon:
Hue—10YR to 2.5YR
Value—4 to 6
Chroma—3 to 6
Texture—loam or silt loam

Bt and BC horizons:
Hue—5YR or 2.5YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, clay loam, sandy clay loam, or silt loam
Note—the lower subhorizons of the Bt horizon and the BC horizon may be gleyed

C horizon:
Hue—10YR to 2.5YR or is neutral
Value—4 to 8
Chroma—0 to 8
Texture—loam, clay loam, sandy clay loam, or silt loam or stratified with these textures

Craigsville Series

Depth class: Very deep
Drainage class: Well drained

Permeability: Moderately rapid or rapid
Landscape: Flood plains
Landform: Alluvial fans
Parent material: Coarse textured alluvium
Slope range: 0 to 5 percent

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Fluventic Dystrudepts

Typical Pedon

Craigsville very gravelly sandy loam, in Mingo County, in a pasture on the flood plain of Leatherwood Creek; 100 feet southwest of the confluence of Leatherwood Creek and Pointlick Fork; about 1.5 miles north of Leatherwood; USGS Mallory topographic quadrangle; lat. 37 degrees 38 minutes 25 seconds N. and long. 81 degrees 48 minutes 50 seconds W.

Ap—0 to 7 inches; dark brown (10YR 3/3) very gravelly sandy loam; weak medium granular structure; friable; many very fine to medium roots; 40 percent sandstone gravel; very strongly acid; clear wavy boundary.
BA—7 to 10 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam; weak fine and medium subangular blocky structure; friable; many very fine to medium roots; 50 percent sandstone gravel; very strongly acid; clear wavy boundary.
Bw—10 to 20 inches; dark yellowish brown (10YR 4/6) extremely gravelly sandy loam; weak fine subangular blocky structure; very friable; many very fine to medium roots; 60 percent sandstone gravel; strongly acid; clear wavy boundary.
BC—20 to 30 inches; dark yellowish brown (10YR 4/6) extremely gravelly loamy coarse sand; single grained; loose; common very fine and fine roots; 65 percent sandstone gravel; strongly acid; clear wavy boundary.
C—30 to 65 inches; dark yellowish brown (10YR 4/6) extremely gravelly loamy coarse sand; single grained; loose; 70 percent sandstone gravel; moderately acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, very strongly acid or strongly acid
Kind and content of rock fragments: Mostly sandstone gravel and cobbles that make up 5 to 60 percent of the A horizon and 35 to 70 percent of the B and C horizons

A horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture—loam or sandy loam

BA and Bw horizons:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 6
Texture—loam, sandy loam, or loamy sand

BC horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—loam, sandy loam, loamy coarse sand, or loamy sand

C horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—sandy loam, loamy coarse sand, or loamy sand

Fiveblock Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Landscape: Mountains
Landform: Reclaimed lands on mountain slopes and ridges
Parent material: Mine spoil
Slope range: 0 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents

Typical Pedon

Fiveblock very channery sandy loam, in an area of Fiveblock and Kaymine soils, 0 to 15 percent slopes, extremely stony, in Mingo County, on a recently reclaimed mountaintop removal strip mine; about 2,300 feet south-southeast of Twisted Gun Gap and about 6 miles southwest of Gilbert; USGS Wharncliffe topographic quadrangle; lat. 37 degrees 34 minutes 39 seconds N. and long. 81 degrees 55 minutes 24 seconds W.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) very channery sandy loam; weak fine granular structure; friable; many fine and very fine roots; 50 percent channers (90 percent sandstone and 10 percent shale); moderately alkaline; clear wavy boundary.
AC—2 to 10 inches; very dark gray (2.5Y 3/1) extremely channery sandy loam; weak medium subangular blocky structure parting to weak fine and medium granular (identifiable structure 35 percent of volume); friable; common fine and very fine roots; 60 percent channers (90 percent sandstone and 10 percent shale); moderately alkaline; clear wavy boundary.
C1—10 to 30 inches; very dark gray (2.5Y 3/1) extremely channery sandy loam; massive; friable; common fine and very fine roots; 60 percent channers (90 percent sandstone and 10 percent shale); moderately alkaline; clear wavy boundary.
C2—30 to 65 inches; very dark gray (2.5Y 3/1) extremely channery sandy loam; massive; friable; common very fine roots; 80 percent channers, flagstones, and stones (90 percent sandstone and 10 percent shale); moderately alkaline.

Range in Characteristics

Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, moderately acid to moderately alkaline
Content and kind of rock fragments: 65 percent or more gray, neutral sandstone throughout the profile with small amounts of siltstone, shale, and coal
Fine-earth fraction: Averages 5 to 18 percent clay

A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture of the fine-earth fraction—sandy loam or loam

AC horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 6
Texture of the fine-earth fraction—sandy loam or loamy sand

C horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 6
Texture of the fine-earth fraction—sandy loam or loamy sand

Gilpin Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Mountains
Landform: Crests of nose slopes and summits on ridges
Parent material: Residuum
Slope range: 25 to 35 percent

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Gilpin silt loam, in Lincoln County, in an area of Gilpin-Upshur complex, 25 to 35 percent slopes, on a wooded ridgetop lying between Joe's Creek and Trace Fork, about 2 miles south of Garretts Bend; USGS Garretts Bend topographic quadrangle; lat. 38 degrees 16 minutes 33 seconds N. and long. 81 degrees 55 minutes 14 seconds W.

Oi—0 to 2 inches; slightly decomposed leaf litter; abrupt smooth boundary.
Oe—2 to 3 inches; very dark gray (10YR 3/1) fibrous mat of moderately decomposed leaf litter; abrupt smooth boundary.
A—3 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; many very fine, fine, medium, and coarse roots; 5 percent shale and siltstone channers; strongly acid; clear wavy boundary.
BA—6 to 9 inches; yellowish brown (10YR 5/4) channery silt loam; weak fine subangular blocky structure; friable; many fine, medium, and coarse roots; 15 percent shale and siltstone channers; strongly acid; clear wavy boundary.
Bt1—9 to 16 inches; yellowish brown (10YR 5/6) channery silt loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; few faint clay films on faces of peds; 20 percent shale and siltstone channers; very strongly acid; clear wavy boundary.
Bt2—16 to 22 inches; brown (7.5YR 5/4) channery silty clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots; common faint clay films on faces of peds; 20 percent shale and siltstone channers; very strongly acid; gradual wavy boundary.
BC—22 to 28 inches; brown (7.5YR 5/4) channery silty clay loam; weak medium subangular blocky structure; firm; few fine roots; 30 percent shale and siltstone channers; very strongly acid; abrupt wavy boundary.
Cr—28 to 33 inches; interbedded soft shale, siltstone, and fine grained sandstone.
R—33 inches; hard, fine grained sandstone bedrock.

Range in Characteristics

Thickness of the solum: 18 to 36 inches

Depth to bedrock: 20 to 40 inches
Reaction: In unlimed areas, strongly acid to extremely acid
Content of rock fragments: 5 to 40 percent in the solum, 30 to 90 percent in the substratum, and less than 35 percent in the particle-size control section

A or Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 5
Texture—silt loam

BA horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 5
Texture—loam or silt loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture—loam, silt loam, silty clay loam, or clay loam

BC and C horizons (if they occur):
Hue—7.5YR to 2.5Y
Value—3 to 5
Chroma—2 to 6
Texture—loam or silt loam

Grigsby Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Alluvial plains
Landform: Low stream terrace treads and flood plains
Parent material: Coarse textured alluvium
Slope range: 0 to 3 percent

Taxonomic classification: Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Grigsby loam, in Wayne County, in an area of cropland on the flood plain of Twelvepole Creek; about 210 yards northeast of the confluence of Trace Fork and the West Fork of Twelvepole Creek and 280 yards east-northeast of the intersection of West Virginia State Routes 152 and 37 at Echo; USGS Wayne topographic quadrangle; lat. 38 degrees 10 minutes 43 seconds N. and long. 82 degrees 28 minutes 44 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure parting to moderate fine and medium granular; very friable; many fine and medium roots; moderately acid; clear smooth boundary.
AB—7 to 12 inches; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common fine and medium roots; slightly acid; abrupt smooth boundary.

Bw1—12 to 20 inches; brownish yellow (10YR 6/6) sandy loam; weak coarse subangular blocky structure; very friable; common fine roots; slightly acid; clear smooth boundary.
Bw2—20 to 31 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; common fine roots; moderately acid; gradual wavy boundary.
BC—31 to 42 inches; yellowish brown (10YR 5/4) sandy loam with pockets of silt loam; weak medium and coarse subangular blocky structure; very friable; few fine roots; slightly acid; gradual wavy boundary.
C—42 to 65 inches; yellowish brown (10YR 5/4 and 5/6) sandy loam; massive; very friable; few fine roots; slightly acid.

Range in Characteristics

Thickness of the solum: 30 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, moderately acid to neutral in the solum and strongly acid to neutral in the substratum
Content of rock fragments: 0 to 15 percent in the solum and 0 to 60 percent in the substratum

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—loam

AB horizon:
Hue—10YR
Value—4
Chroma—3
Texture—sandy loam

Bw and BC horizons:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—sandy loam, fine sandy loam, or loam

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—sandy loam, fine sandy loam, loamy fine sand, or loam

Guyandotte Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Mountains
Landform: Backslopes, footslopes, and coves that have cool aspects
Parent material: Colluvium
Slope range: 35 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, active, mesic Humic Dystrudepts

Typical Pedon

Guyandotte channery loam, in Logan County, in an area of Matewan-Highsplint-Guyandotte association, very steep, extremely stony, on a wooded, north-facing side slope; in Toney Fork, about 4.5 miles northeast of Pardee; USGS Lorado topographic quadrangle; lat. 37 degrees 48 minutes 45 seconds N. and long. 81 degrees 38 minutes 38 seconds W.

L—3 inches to 0; loose hardwood leaf litter.

Oe—0 to 1 inch; moderately decomposed plant material; abrupt smooth boundary.

A1—1 to 9 inches; black (10YR 2/1) channery loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; very friable; many fine, medium, and coarse roots; 30 percent sandstone channers; slightly acid; clear wavy boundary.

A2—9 to 14 inches; very dark grayish brown (10YR 3/2) channery loam, brown (10YR 5/3) dry; moderate medium granular structure; very friable; many fine, medium, and coarse roots; 30 percent sandstone channers; moderately acid; clear wavy boundary.

BA—14 to 19 inches; dark yellowish brown (10YR 3/4) very channery loam; weak medium subangular blocky structure; friable; common fine and medium roots; 45 percent sandstone channers; moderately acid; clear wavy boundary.

Bw1—19 to 33 inches; yellowish brown (10YR 5/4) very channery loam; moderate medium subangular blocky structure; friable; common fine and medium roots; 55 percent sandstone channers; moderately acid; clear wavy boundary.

Bw2—33 to 46 inches; yellowish brown (10YR 5/4) very channery loam; weak medium subangular blocky structure; friable; few fine and very fine roots; 55 percent sandstone channers; slightly acid; clear wavy boundary.

BC—46 to 65 inches; yellowish brown (10YR 5/4) extremely channery sandy loam; weak coarse subangular blocky structure; friable; 65 percent sandstone channers and 5 percent sandstone flagstones; very strongly acid.

Range in Characteristics

Thickness of the solum: More than 50 inches

Reaction: In unlimed areas, very strongly acid to neutral in the A horizon and very strongly acid to moderately acid in the B and C horizons

Kind and content of rock fragments: Mostly sandstone channers that range from 15 to 70 percent in individual horizons and average 35 percent or more in the control section

Depth to bedrock: More than 60 inches

A horizon:

Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—sandy loam or loam

BA, Bw, and BC horizons:

Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture—sandy loam or loam

C horizon (if it occurs):

Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—sandy loam or loam

Highsplint Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Mountains
Landform: Backslopes, footslopes, and coves
Parent material: Coarse textured or medium textured colluvium
Slope range: 15 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Highsplint channery loam, in Logan County, in an area of Matewan-Highsplint-Guyandotte association, very steep, extremely stony, on a wooded, southeast-facing upper side slope; about 1 mile southwest of the confluence of Spruce Fork and Garland Fork at Kelly; USGS Amherstdale topographic quadrangle; lat. 37 degrees 50 minutes 12 seconds N. and long. 81 degrees 48 minutes 45 seconds W.

Oi—0 to 0.5 inch; slightly decomposed plant material; abrupt smooth boundary.
A—0.5 inch to 3 inches; very dark grayish brown (10YR 3/2) channery loam; moderate medium granular structure; very friable; many very fine to medium roots; 20 percent sandstone channers; moderately acid; clear wavy boundary.
BA—3 to 6 inches; yellowish brown (10YR 5/4) channery loam; weak medium subangular blocky structure; friable; many very fine to coarse roots; 20 percent sandstone channers; strongly acid; clear wavy boundary.
Bw1—6 to 30 inches; strong brown (7.5YR 5/6) channery loam; weak medium subangular blocky structure; friable; common medium and coarse roots; 30 percent sandstone channers; strongly acid; clear wavy boundary.
Bw2—30 to 41 inches; strong brown (7.5YR 5/6) very channery loam; weak coarse subangular blocky structure; friable; common medium and fine roots; 35 percent sandstone channers and 10 percent sandstone flagstones; very strongly acid; clear wavy boundary.
BC—41 to 53 inches; yellowish brown (10YR 5/6) extremely channery loam; weak coarse subangular blocky structure; firm; few medium and coarse roots; 55 percent sandstone channers and 10 percent sandstone flagstones; very strongly acid; clear wavy boundary.
C—53 to 65 inches; yellowish brown (10YR 5/6) extremely channery loam; massive; firm; few medium and coarse roots; 60 percent sandstone channers and 20 percent sandstone flagstones; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, extremely acid to slightly acid in the A horizon and extremely acid to strongly acid in the B and C horizons
Kind and content of rock fragments: Mostly sandstone channers and flagstones ranging from 15 to 35 percent, by volume, within a depth of 24 inches but averaging more than 35 percent in the particle-size control section

A horizon:
Hue—10YR
Value—2 to 5
Chroma—1 to 4
Texture—loam, sandy loam, or fine sandy loam

BA horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, sandy loam, or fine sandy loam

Bw horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture—loam, sandy loam, or clay loam

BC horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, sandy loam, or clay loam
Note—brown, olive, or gray redoximorphic features below a depth of 40 inches in some pedons

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loam, sandy loam, fine sandy loam, or clay loam
Note—brown, olive, or gray redoximorphic features below a depth of 40 inches in many pedons

Itmann Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Landscape: Mountains
Landform: Very steep out slopes on gob piles
Parent material: Acid mine refuse from deep mines
Slope range: 35 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents

Typical Pedon

Itmann extremely channery sandy loam, very steep, in Mingo County, on a mine spoil out slope along Alum Creek; about 0.8 mile southeast of Glen Alum; USGS Wharncliffe topographic quadrangle; lat. 37 degrees 34 minutes 34 seconds N. and long. 81 degrees 59 minutes 27 seconds W.

A—0 to 5 inches; very dark gray (10YR 3/1) extremely channery sandy loam; weak fine granular structure; very friable; common fine and very fine roots; 60 percent channers (65 percent carboliths, 20 percent sandstone, and 15 percent mudstone); extremely acid; clear wavy boundary.
C1—5 to 50 inches; black (N 2.5/0) extremely channery sandy loam; massive; friable; few very fine roots; 65 percent channers (70 percent carboliths, 5 percent sandstone, and 25 percent mudstone); extremely acid; clear wavy boundary.
C2—50 to 65 inches; black (N 2.5/0) extremely channery sandy loam; massive; friable; few very fine roots; 65 percent channers and flagstones (75 percent carboliths, 5 percent sandstone, and 20 percent mudstone); extremely acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, extremely acid to strongly acid
Content and kind of rock fragments: 15 to 80 percent throughout the profile, averaging 35 percent or more; carbolith fragments make up more than 50 percent
Fine-earth fraction: Averages 4 to 15 percent clay

A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—sandy loam

C horizon:
Hue—10YR or is neutral
Value—2 or 3
Chroma—0 to 2
Texture—sandy loam

Kanawha Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: River valleys
Landform: Flood plains
Parent material: Medium textured alluvium
Slope range: 0 to 8 percent

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Kanawha loam, in Wayne County, in an area of Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes, in a cultivated field about 1.0 mile west-southwest of the confluence of Elijah Creek and the Big Sandy River; about 490 yards southwest of the Christian Cemetery at Prichard; USGS Prichard topographic quadrangle; lat. 38 degrees 14 minutes 30 seconds N. and long. 82 degrees 36 minutes 17 seconds W.

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; weak medium granular structure; very friable; many roots; slightly acid; abrupt smooth boundary.
Bt1—9 to 25 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common roots; many distinct clay films on faces of peds; moderately acid; clear wavy boundary.
Bt2—25 to 40 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common roots; common distinct clay films on faces of peds; moderately acid; gradual wavy boundary.
BC—40 to 47 inches; yellowish brown (10YR 5/8) sandy loam; weak coarse subangular blocky structure; friable; few roots; moderately acid; clear wavy boundary.
C—47 to 65 inches; yellowish brown (10YR 5/6) and strong brown (7.5YR 4/6) stratified loamy sand and sandy loam; massive; very friable; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 72 inches
Depth to bedrock: More than 60 inches

Reaction: In unlimed areas, strongly acid or moderately acid in the upper part of the solum and moderately acid or slightly acid in the lower part of the solum and in the substratum
Content of rock fragments: 0 to 15 percent in the Ap horizon, 0 to 20 percent in the individual subhorizons of the B horizon, and 0 to 60 percent in the C horizon

Ap horizon:
Hue—10YR or 7.5YR
Value—3 to 5
Chroma—2 to 4
Texture—loam

BA, Bt, and BC horizons:
Hue—10YR to 5YR
Value—4 or 5
Chroma—3 to 8
Texture—clay loam, loam, silt loam, sandy clay loam, or fine sandy loam

C horizon:
Hue—10YR to 5YR
Value—4 or 5
Chroma—1 to 6
Texture—sandy loam, loam, or silt loam with common lenses of loamy sand

Kaymine Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Mountains
Landform: Reclaimed land on mountain slopes and ridges
Parent material: Mine spoil
Slope range: 0 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents

Typical Pedon

Kaymine very channery loam, in McDowell County, in an area of Kaymine-Cedarcreek-Dekalb complex, very steep, extremely stony, on a reclaimed strip mine; about 0.8 mile southeast of the intersection of U.S. Route 52 and Alternate Route 52 (Virginia Avenue) in Welch; USGS Welch topographic quadrangle; lat. 37 degrees 25 minutes 22 seconds N. and long. 81 degrees 33 minutes 31 seconds W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) very channery loam; weak fine granular structure; very friable; many fine and very fine roots; 45 percent channers, flagstones, and stones (50 percent siltstone, 45 percent sandstone, and 5 percent coal); neutral; clear wavy boundary.
C1—4 to 14 inches; dark grayish brown (10YR 4/2) very channery loam; weak medium subangular blocky structure; friable; common fine and very fine roots; 55 percent channers and stones (55 percent siltstone and 45 percent sandstone); neutral; gradual wavy boundary.
C2—14 to 26 inches; dark grayish brown (2.5Y 4/2) extremely channery loam; massive; friable; few fine and very fine roots; 65 percent channers and stones (45 percent siltstone and 55 percent sandstone); neutral; gradual wavy boundary.

C3—26 to 65 inches; dark grayish brown (10YR 4/2) extremely channery loam; massive; friable; very few fine and very fine roots to a depth of 40 inches; 75 percent channers and stones (55 percent siltstone and 45 percent sandstone); neutral.

Range in Characteristics

Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, moderately acid to moderately alkaline
Content and kind of rock fragments: 35 to 80 percent throughout the profile; siltstone, sandstone, shale, and coal fragments, each less than 65 percent of the total
Fine-earth fraction: Averages 18 to 27 percent clay
Note: In some pedons, the A horizon was formed by stockpiling natural surficial soil and later spreading the stockpiled material over the land surface. In these pedons, the horizon is 4 to 20 inches thick and contains 10 to 35 percent channers.

A horizon:
Hue—10YR or 2.5Y or is neutral
Value—3 or 4
Chroma—0 to 4
Texture of fine-earth fraction—loam

C horizon:
Hue—10YR or 2.5Y or is neutral
Value—2 to 5
Chroma—0 to 6
Texture of the fine-earth fraction—loam or silt loam

Latham Series

Depth class: Moderately deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Mountains
Landform: Saddles on mountaintops and ridges
Parent material: Residuum derived from interbedded shale and siltstone
Slope range: 25 to 35 percent

Taxonomic classification: Fine, mixed, semiactive, mesic Aquic Hapludults

Typical Pedon

Latham silt loam, in Lincoln County, in a wooded area of Latham-Gilpin complex, 8 to 15 percent slopes; 0.53 mile east-northeast of the confluence of Dry Run Creek and the Guyandotte River; 0.64 mile northeast of the Atenville Elementary School and 1.6 miles north-northwest of Harts; USGS Ranger topographic quadrangle; lat. 38 degrees 03 minutes 21 seconds N. and long. 82 degrees 08 minutes 11 seconds W.

A—0 to 4 inches; dark brown (10YR 5/4) silt loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.
BA—4 to 8 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.
Bt1—8 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; many distinct clay films on

faces of peds; 2 percent shale fragments; very strongly acid; gradual smooth boundary.

Bt2—20 to 28 inches; strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; very firm; common distinct clay films on faces of peds; 2 percent shale fragments; many medium prominent gray (7.5YR 6/1) iron depletions on all faces of peds; very strongly acid; clear smooth boundary.

BCg—28 to 34 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; many medium prominent yellowish red (5YR 4/6) iron accumulations on faces of peds; 5 percent shale fragments; very strongly acid; clear smooth boundary.

Cg—34 to 38 inches; light brownish gray (10YR 6/2) silty clay loam; massive; firm; common medium prominent strong brown (7.5YR 4/6) iron accumulations in the matrix; 10 percent shale fragments; extremely acid; clear smooth boundary.

Cr—38 to 44 inches; soft interbedded shale and siltstone.

Range in Characteristics

Thickness of the solum: 20 to 40 inches

Depth to bedrock: 20 to 40 inches

Reaction: In unlimed areas, extremely acid to strongly acid in the A horizon and extremely acid or very strongly acid in the subsoil and substratum

Content of rock fragments: 0 to 15 percent in the A horizon and 0 to 20 percent in the subsoil and substratum

A horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture—silt loam or silty clay loam

BA horizon:

Hue—10YR

Value—4 or 5

Chroma—4 to 6

Texture—silt loam or silty clay loam

Bt and Btg horizons:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—2 to 8

Texture—silty clay loam or silty clay

BC and BCg horizons:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—3 to 8

Texture—silty clay loam or silty clay

Note—redox accumulations or depletions, or both, in the lower part of the argillic horizon in most pedons

C and Cg horizons:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2 to 6

Texture—silty clay loam or silty clay

Note—redox accumulations or depletions, or both, in most pedons

Lily Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: Mountains
Landform: Summits on ridges and mountaintops
Parent material: Residuum
Slope range: 15 to 35 percent

Taxonomic classification: Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Lily sandy loam, in Mingo County, in an area of Lily-Matewan complex, 15 to 35 percent slopes, very stony, on a wooded ridgetop east of the headwaters of Oldfield Branch; about 1.3 miles south-southwest of the confluence of Laurel Fork and Pigeon Creek and about 3.3 miles (airline) southeast of Naugatuck; USGS Naugatuck topographic quadrangle; lat. 37 degrees 46 minutes 37 seconds N. and long. 82 degrees 17 minutes 27 seconds W.

Oi—0 to 0.5 inch; slightly decomposed plant material; abrupt smooth boundary.

A—0.5 inch to 4 inches; dark brown (10YR 3/3) sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; 5 percent sandstone rock fragments; moderately acid; clear wavy boundary.

BA—4 to 10 inches; mixed yellowish brown (10YR 5/6) and brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; very friable; common medium and coarse roots; 10 percent sandstone rock fragments; very strongly acid; clear wavy boundary.

Bt1—10 to 16 inches; mixed brownish yellow (10YR 6/6) and brown (10YR 5/3) sandy loam; weak medium subangular blocky structure; friable; common medium and coarse roots; few faint discontinuous clay films; 10 percent sandstone rock fragments; very strongly acid; clear wavy boundary.

Bt2—16 to 26 inches; strong brown (7.5YR 5/6) channery sandy clay loam; moderate medium subangular blocky structure; friable; few medium and coarse roots; few faint discontinuous clay films; 15 percent sandstone rock fragments; very strongly acid; clear wavy boundary.

C—26 to 28 inches; strong brown (7.5YR 5/6) channery sandy clay loam; massive; friable; few fine roots; 20 percent sandstone rock fragments; very strongly acid; clear wavy boundary.

Cr—28 to 37 inches; variegated yellow (10YR 7/6) and brownish yellow (10YR 6/8), moderately weathered sandstone bedrock.

R—37 inches; slightly weathered, coarse grained sandstone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: In unlimed areas, strongly acid to extremely acid
Content of rock fragments: 0 to 30 percent to a depth of 24 inches and 0 to 35 percent below a depth of 24 inches; averages less than 35 percent in the particle-size control section

A horizon:
Hue—10YR or 7.5YR
Value—2 to 5
Chroma—1 to 3
Texture—loam, silt loam, fine sandy loam, or sandy loam

BA horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, fine sandy loam, or sandy loam

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, sandy loam, or sandy clay loam

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 8
Texture—loamy sand, sandy loam, fine sandy loam, loam, or sandy clay loam

Lobdell Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: River valleys
Landform: Flood plains
Parent material: Medium textured alluvium
Slope range: 2 to 8 percent

Taxonomic classification: Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon

Lobdell loam, in Wayne County, in a pasture about 90 yards northwest of the confluence of Sours Run and Whites Creek; about 640 yards southeast of the intersection of West Virginia County Routes 14 and 19 (Toms Creek-Whites Road); about 2.4 miles north of Centerville; USGS Burnaugh topographic quadrangle; lat. 38 degrees 17 minutes 28 seconds N. and long. 82 degrees 32 minutes 07 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure parting to weak fine and medium granular; friable; many fine and medium roots; 5 percent rock fragments; slightly acid; clear wavy boundary.
Bw1—6 to 20 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; friable; common fine and medium roots; neutral; gradual wavy boundary.
Bw2—20 to 38 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; friable; common fine roots; common medium distinct light brownish gray (10YR 6/2) iron depletions; neutral; gradual wavy boundary.
C—38 to 65 inches; dark yellowish brown (10YR 4/6) stratified silt loam and loam with many medium light brownish gray (10YR 6/2) iron depletions; massive; friable; many fine and medium iron and manganese concretions; neutral.

Range in Characteristics

Thickness of the solum: 24 to 50 inches
Depth to bedrock: More than 60 inches

Reaction: In unlimed areas, strongly acid to slightly acid in the solum and moderately acid or slightly acid in the substratum
Content of rock fragments: 0 to 5 percent in the A horizon and 0 to 10 percent in the B and C horizons

A horizon:
Hue—10YR or 7.5YR
Value—3 or 4
Chroma—2 or 3
Texture—loam

Bw horizon and BC horizon (if it occurs):
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam, loam, or sandy loam

C horizon:
Hue—2.5YR to 7.5YR
Value—4 to 6
Chroma—1 to 8
Texture—silt loam, loam, or sandy loam; some pedons stratified below a depth of 40 inches

Matewan Series

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Landscape: Mountains
Landform: Mountaintops and ridges
Parent material: Residuum
Slope range: 15 to 80 percent

Taxonomic classification: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Matewan very channery sandy loam, in Mingo County, in an area of Matewan-Highsplint-Guyandotte association, very steep, extremely stony, on a wooded ridgetop; about 1.3 miles west of the confluence of Rockhouse Fork and Pigeon Creek and 0.26 mile north of the Buffalo Mountain Lookout Tower; about 1.67 miles (airline) west of Delbarton; USGS Delbarton topographic quadrangle; lat. 37 degrees 42 minutes 36 seconds N. and long. 82 degrees 12 minutes 52 seconds W.

Oe—0 to 0.5 inch; very dark brown (10YR 2/2) moderately decomposed plant material; abrupt smooth boundary.
A—0.5 inch to 4 inches; very dark grayish brown (10YR 3/2) very channery sandy loam, gray (10YR 5/1) dry; moderate fine granular structure; very friable; many fine, medium, and coarse roots; 35 percent sandstone channers; very strongly acid; abrupt wavy boundary.
BA—4 to 8 inches; yellowish brown (10YR 5/4) very channery sandy loam; weak medium subangular blocky structure; very friable; many fine, medium, and coarse roots; 45 percent sandstone channers; extremely acid; clear wavy boundary.
Bw—8 to 30 inches; brownish yellow (10YR 6/6) extremely channery loam; weak medium subangular blocky structure; very friable; common medium and coarse roots; 60 percent sandstone rock fragments (35 percent flagstones and 65 percent channers); extremely acid; clear wavy boundary.

C—30 to 33 inches; brownish yellow (10YR 6/6) extremely flaggy loam; massive; friable; fine and coarse roots; 75 percent sandstone rock fragments (40 percent flagstones and 60 percent channers); extremely acid; abrupt smooth boundary.
R—33 inches; hard sandstone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: In unlimed areas, extremely acid to moderately acid
Kind and content of rock fragments: Sandstone channers and flagstones make up 5 to 50 percent of the A horizon, 15 to 65 percent of the B horizon, and 50 to 90 percent of the C horizon; fragments average 35 to 75 percent in the particle-size control section

A horizon:
Hue—10YR
Value—2 to 4
Chroma—1 to 4
Texture of the fine-earth fraction—loam, sandy loam, or fine sandy loam

B horizon:
Hue—10YR or 7.5YR
Value—4 to 7
Chroma—4 to 8
Texture of the fine-earth fraction—loam, sandy loam, or fine sandy loam

C horizon:
Hue—10YR or 7.5YR
Value—5 or 6
Chroma—4 to 6
Texture of the fine-earth fraction—loam, sandy loam, or loamy sand

Pineville Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the subsoil and moderate or moderately rapid in the substratum
Landscape: Mountains
Landform: Mountain flanks and bases of backslopes and footslopes
Parent material: Medium textured colluvium
Slope range: 15 to 80 percent

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Pineville very channery loam, in Boone County, in a wooded area of Dekalb-Pineville-Guyandotte association, very steep, extremely stony, at the head of a north-facing cove southwest of Dick's Creek; about 0.2 mile east of the intersection of Route 119 and Armco Road and about 1 mile (airline) northeast of Irene; USGS Julian topographic quadrangle; lat. 38 degrees 12 minutes 03 seconds N. and long. 81 degrees 49 minutes 57 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 4 inches; dark brown (10YR 3/3) very channery loam; moderate fine granular structure; very friable; many fine and medium roots; 50 percent sandstone channers; extremely acid; clear wavy boundary.

BA—4 to 11 inches; yellowish brown (10YR 5/4) channery loam; weak fine subangular blocky structure; very friable; many fine and medium roots; 30 percent sandstone channers; very strongly acid; clear wavy boundary.

Bt1—11 to 21 inches; yellowish brown (10YR 5/6) channery loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; few faint clay films on faces of peds and surfaces along pores; 25 percent sandstone channers; very strongly acid; clear wavy boundary.

Bt2—21 to 34 inches; yellowish brown (10YR 5/6) channery loam; moderate medium subangular blocky structure; friable; common fine and medium roots; many faint clay films on faces of peds and surfaces along pores; 20 percent sandstone channers; very strongly acid; gradual wavy boundary.

Bt3—34 to 47 inches; yellowish brown (10YR 5/6) channery loam; weak medium subangular blocky structure; friable; few fine and very fine roots; many faint clay films on faces of peds and surfaces along pores; 25 percent sandstone channers; very strongly acid; gradual wavy boundary.

BC—47 to 59 inches; brownish yellow (10YR 6/6) very channery loam; weak medium and coarse subangular blocky structure; friable; few fine and medium roots; few faint clay films on surfaces along pores; 45 percent sandstone channers; very strongly acid; gradual wavy boundary.

C—59 to 65 inches; brownish yellow (10YR 6/6) very channery loam; massive; firm; 45 percent sandstone channers; few faint strong brown (7.5YR 5/6) iron masses and few prominent black (10YR 2/1) manganese concretions; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches

Depth to bedrock: More than 60 inches

Reaction: In unlimed areas, extremely acid to neutral in the A horizon and extremely acid to strongly acid in the B and C horizons

Content and kind of rock fragments: Generally from 15 to 60 percent in individual horizons, mostly sandstone fragments; averages 15 to 35 percent in the control section

A horizon:

Hue—10YR
Value—2 to 5
Chroma—1 to 4
Texture of the fine-earth fraction—loam, sandy loam, or fine sandy loam

BA horizon:

Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—loam, sandy loam, or fine sandy loam

Bt horizon:

Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture of the fine-earth fraction—loam, sandy loam, or clay loam

BC horizon:

Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture of the fine-earth fraction—loam, sandy loam, or clay loam

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture of the fine-earth fraction—loam, sandy loam, fine sandy loam, or clay loam
Note—brown, olive, or gray redoximorphic features in some pedons

Sensabaugh Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Landscape: River valleys
Landform: Alluvial fans and low terrace treads
Parent material: Medium textured alluvium
Slope range: 0 to 8 percent

Taxonomic classification: Fine-loamy, mixed, semiactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Sensabaugh loam, in Boone County, in an area of Sensabaugh-Lobdell loams, 2 to 8 percent slopes, used as cropland; 100 feet north of Dog Fork; about 0.5 mile southeast of the intersection of U.S. Route 119 and Dog Fork Road (Old County 7 Road) and 1.2 miles east of Manila; USGS Henlawson topographic quadrangle; lat. 37 degrees 59 minutes 16 seconds N. and long. 81 degrees 55 minutes 28 seconds W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loam, pale brown (10YR 6/3) dry; moderate fine granular structure; very friable; many fine and very fine roots; 10 percent gravel; neutral; abrupt smooth boundary.
AB—6 to 11 inches; brown (10YR 4/3) gravelly loam; weak fine subangular blocky structure; very friable; common fine and medium roots; 20 percent gravel; neutral; clear wavy boundary.
Bw—11 to 26 inches; dark yellowish brown (10YR 4/6) gravelly loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; 15 percent gravel; slightly acid; clear smooth boundary.
BC—26 to 40 inches; dark yellowish brown (10YR 4/6) gravelly loam; weak coarse subangular blocky structure; friable; 25 percent gravel; slightly acid; clear wavy boundary.
C1—40 to 55 inches; dark yellowish brown (10YR 4/4) very gravelly loam; massive; friable; 40 percent gravel; moderately acid; gradual wavy boundary.
C2—55 to 65 inches; dark yellowish brown (10YR 4/4) very gravelly loam; massive; friable; 50 percent gravel; few fine distinct strong brown (7.5YR 5/6) iron masses and few fine faint pale brown (10YR 6/3) iron depletions; moderately acid.

Range in Characteristics

Thickness of the solum: 24 to 48 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, moderately acid to neutral
Content of rock fragments: 5 to 25 percent in the A horizon, 15 to 40 percent in the B horizon, and 15 to 60 percent in the substratum

Ap and AB horizons:
Hue—10YR

Value—3 or 4
Chroma—2 or 3
Texture of the fine-earth fraction—loam and silt loam

Bw and BC horizons:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—sandy loam, silt loam, loam, or clay loam
Note—gray, brown, or yellow redoximorphic features below a depth of about 24 inches in some pedons

C horizon:
Hue—10YR or 7.5YR
Value—3 to 5
Chroma—3 to 6
Texture of the fine-earth fraction—fine sandy loam, loam, silt loam, or clay loam

Shelocta Series

Depth class: Deep or very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Mountains
Landform: Mountain slopes
Slope range: 35 to 80 percent

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Shelocta silt loam, in Logan County, in an area of Berks-Shelocta association, very steep, extremely stony, on a south-facing footslope; about 0.25 mile due north of Garrett Chapel and 2.5 miles east-northeast of Chapmanville; USGS Henlawson topographic quadrangle; lat. 37 degrees 58 minutes 41 seconds N. and long. 81 degrees 50 minutes 00 seconds W.

Oe—0 to 0.5 inch; very dark grayish brown (10YR 3/2), moderately decomposed plant material; abrupt smooth boundary.

A—0.5 inch to 4 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; many fine and very fine roots; 5 percent sandstone channers; moderately acid; abrupt wavy boundary.

BA—4 to 11 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; 10 percent rock fragments (80 percent sandstone channers and 20 percent shale channers); very strongly acid; clear wavy boundary.

Bt1—11 to 24 inches; strong brown (7.5YR 4/6) channery silty clay loam; moderate medium subangular blocky structure; friable; common medium and coarse roots; many faint clay films on surfaces along root channels, in pores, and on faces of peds; 15 percent rock fragments (65 percent sandstone channers and 35 percent shale channers); very strongly acid; clear wavy boundary.

Bt2—24 to 39 inches; strong brown (7.5YR 4/6) channery silty clay loam; moderate medium subangular blocky structure; friable; common medium and coarse roots; many faint clay films on surfaces along root channels, in pores, and on faces of peds; 20 percent rock fragments (75 percent sandstone channers and 25 percent shale channers); very strongly acid; clear wavy boundary.

Bt3—39 to 55 inches; brown (7.5YR 4/4) channery silty clay loam; moderate coarse subangular blocky structure; firm; few medium and coarse roots; common faint clay films on faces of peds and on surfaces along pores; 25 percent rock fragments (80 percent sandstone channers and 20 percent shale channers); very strongly acid; clear wavy boundary

BC—55 to 65 inches; dark yellowish brown (10YR 4/4) very channery silty clay loam; weak medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds and on surfaces along pores; 35 percent rock fragments (85 percent shale channers and 15 percent sandstone channers); very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches or more
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, strongly acid to extremely acid
Kind and content of rock fragments: Siltstone and shale fragments, mostly channers, ranging from 2 to 35 percent in the A horizon, 5 to 50 percent in the B horizon, and 15 to 70 percent in the C horizon; fragments average 15 to 35 percent in the particle-size control section

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam or loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam, silty clay loam, or loam

Bt and BC horizons:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam or silty clay loam

C horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 6
Texture—silt loam, silty clay loam, or clay loam

Udorthents

Depth class: Very shallow to very deep
Drainage class: Well drained
Permeability: Slow to moderately rapid
Landscape: Areas disturbed by road construction, urban development, or other human activities
Parent material: Mixed soil material and rock
Slope range: 0 percent to nearly vertical

Taxonomic classification: Loamy-skeletal, mixed, mesic Typic Udorthents

Typical Pedon

A typical pedon for Udorthents is not given because of the extreme variability of these soils.

Range in Characteristics

Depth to bedrock: Less than 10 to more than 60 inches
Reaction: In unlimed areas, very strongly acid to neutral
Kind and content of rock fragments: Mostly sandstone fragments ranging from 15 to 90 percent

All horizons:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—2 to 8
Texture of the fine-earth fraction—loam or sandy loam

Yeager Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid
Landscape: Alluvial plains
Landform: Low flood plains
Parent material: Coarse textured alluvium
Slope range: 0 to 3 percent

Taxonomic classification: Sandy, mixed, mesic Typic Udifluvents

Typical Pedon

Yeager fine sandy loam, in Logan County, in an area of woodland between the railroad tracks and the Guyandotte River, immediately south of Taplin; USGS Logan topographic quadrangle; lat. 37 degrees 45 minutes 10 seconds N. and long. 81 degrees 53 minutes 41 seconds W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable; many fine to coarse roots; slightly acid; clear wavy boundary.
C1—4 to 12 inches; 60 percent brown (10YR 4/3) fine sandy loam and 40 percent strata of black (N 2/0) fine sandy loam weathered from coal; massive; very friable; many very fine to coarse roots; moderately acid; clear wavy boundary.
C2—12 to 26 inches; 60 percent yellowish brown (10YR 5/4) loamy sand and 40 percent strata of black (N 2/0) loamy sand weathered from coal; massive; very friable; many very fine to coarse roots; moderately acid; clear wavy boundary.
C3—26 to 54 inches; 70 percent yellowish brown (10YR 5/6) sand and 30 percent strata of black (N 2/0) sand weathered from coal; single grained; loose; few fine and medium roots; strongly acid; clear wavy boundary.
C4—54 to 65 inches; 70 percent yellowish brown (10YR 5/6) sand and 30 percent strata of black (N 2/0) sand weathered from coal; single grained; loose; few fine and medium roots; strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: More than 60 inches
Reaction: In unlimed areas, very strongly acid to neutral

Kind and content of rock fragments: Sandstone or quartz gravel ranging from 0 to 15 percent in the solum and from 0 to 30 percent in the substratum
Note: Modern human artifacts common in the upper 40 inches of the profile

A horizon:
Hue—10YR or 7.5YR
Value—3 to 5
Chroma—2 to 4
Texture of the fine-earth fraction—fine sandy loam, loam, or loamy sand

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture of the fine-earth fraction—fine sandy loam, sandy loam, loamy sand, or sand

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay, symbolized by a lower case "t."

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliquivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide

or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine earth. That portion of the soil consisting of particles less than 2 millimeters in diameter. Particles and rock fragments 2 millimeters in diameter or larger are not included.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon (symbolized by a lowercase “x”), low in porosity and content of organic matter, and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Head out. To form a flower head.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Highwall. The vertical face of exposed rock strata left over on the uphill side of a pre-1977 contour strip mine. Height can range from 25 to 100 feet.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils. The lowercase letters that represent subdivisions of major horizons are as follows:

e, organic material of intermediate decomposition.—This symbol is used with O to indicate organic materials of intermediate decomposition. The fiber content of these materials is 17 to 40 percent (by volume) after rubbing.

g, strong gleying.—This symbol indicates either that iron has been reduced and removed during soil formation or that saturation with stagnant water has preserved it in a reduced state. Most of the affected layers have chroma of 2 or less, and many have redox concentrations. The low chroma can represent either the color of reduced iron or the color of uncoated sand and silt particles from which iron has been removed. The symbol g is not used for materials of low chroma that have no history of wetness, such as some shales or E horizons. If g is used with B, pedogenic change in addition to gleying is implied. If no other pedogenic change besides gleying has taken place, the horizon is designated Cg.

i, slightly decomposed organic material.—This symbol is used with O to indicate the least decomposed of the organic materials. The fiber content of these materials is 40 percent or more (by volume) after rubbing.

p, tillage or other disturbance.—This symbol indicates a disturbance of the surface layer by mechanical means, grazing, or similar uses. A disturbed organic horizon is desigated Op. A disturbed mineral horizon is designated Ap even though it is clearly a former E, B, or C horizon.

r, weathered or soft bedrock.—This symbol is used with C to indicate cemented layers (moderately cemented or less cemented). Examples are weathered igneous rock and partly consolidated sandstone, siltstone, or shale. The excavation difficulty is low to high.

t, accumulation of silicate clay.—This symbol indicates an accumulation of silicate clay that either has formed within a horizon and subsequently has been translocated within the horizon, or has been moved into the horizon by illuviation, or both. At least some part of the horizon should show evidence of clay accumulation either as coatings on faces of peds or in pores, as lamelle, or as bridges between mineral grains.

w, development of color structure.—This symbol is used with B to indicate the development of color or structure, or both, with little or no apparent illuvial accumulation of material. It should not be used to indicate a transitional horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water

table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is

used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Out slope. The area of loose, mixed, regolith material that has been pushed downslope from the bench section of a surface coal mine.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Pebble. A rounded or angular fragment of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. A collection of pebbles is referred to as gravel.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch

Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the Earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping	3 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent
Very steep	35 to 80 percent
Extremely steep	80 to 120 percent

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5

Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay*

loam, silty clay loam, sandy clay, silty clay, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Tipple. A facility for sorting, storing, and loading coal.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Logan, West Virginia.)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	44.0	25.9	35.0	73	-3	70	3.42	1.94	4.67	8	6.8
February-	48.8	27.6	38.2	76	3	100	3.52	2.42	4.58	8	5.6
March----	58.2	34.3	46.3	84	13	245	4.17	2.48	5.57	9	2.2
April----	69.1	41.9	55.5	90	25	467	3.60	2.03	5.11	8	.0
May------	77.1	51.4	64.3	92	34	746	5.07	3.22	6.83	9	.0
June-----	84.2	61.2	72.7	96	46	977	4.78	2.91	6.59	8	.0
July-----	87.4	65.9	76.6	97	53	1,133	5.00	3.35	6.56	8	.0
August---	86.1	64.7	75.4	97	52	1,095	3.98	2.34	5.66	6	.0
September	80.0	57.8	68.9	95	41	866	3.49	1.81	5.14	6	.0
October--	68.9	45.2	57.1	86	29	525	2.98	1.77	4.09	6	.0
November-	57.6	35.7	46.6	80	18	239	3.30	1.98	4.49	6	.2
December-	46.9	29.1	38.0	72	6	104	3.66	2.33	4.64	7	2.6
Yearly:											
Average	67.4	45.1	56.2	---	---	---	---	---	---	---	---
Extreme	---	---	---	98	-6	---	---	---	---	---	---
Total--	---	---	---	---	---	6,567	46.97	34.27	53.59	89	17.5

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Logan, West Virginia.)

Probability	Temperature		
	24^{o} F or lower	28^{o} F or lower	32^{o} F or lower
Last freezing temperature in spring:			
1 year in 10 later than	Apr. 3	Apr. 19	May 1
2 years in 10 later than	Mar. 26	Apr. 14	Apr. 25
5 years in 10 later than	Mar. 12	Apr. 4	Apr. 14
First freezing temperature in fall:			
1 year in 10 earlier than	Nov. 4	Oct. 20	Oct. 16
2 years in 10 earlier than	Nov. 11	Oct. 26	Oct. 21
5 years in 10 earlier than	Nov. 24	Nov. 7	Oct. 30

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Logan, West Virginia.)

Probability	Daily minimum temperature during growing season		
	Higher than 24^{o} F	Higher than 28^{o} F	Higher than 32^{o} F
	Days	Days	Days
9 years in 10	225	191	173
8 years in 10	236	200	181
5 years in 10	256	216	197
2 years in 10	276	231	213
1 year in 10	287	240	222

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AbB	Allegheny loam, 3 to 8 percent slopes	155	*
BrG	Berks-Rock outcrop complex, extremely steep, extremely stony	4,325	0.8
BSF	Berks-Shelocta association, very steep, extremely stony	2,330	0.4
Ch	Chavies fine sandy loam	355	*
Ck	Chavies fine sandy loam, protected	160	*
Cr	Craigsville very gravelly sandy loam	5,535	1.0
FkC	Fiveblock and Kaymine soils, 0 to 15 percent slopes, extremely stony	4,235	0.8
FkF	Fiveblock and Kaymine soils, 35 to 80 percent slopes, extremely stony	17,385	3.1
GmE	Gilpin-Matewan complex, 25 to 35 percent slopes, very stony	30	*
Gw	Grigsby loam	2,695	0.5
HgE	Highsplint channery loam, 15 to 35 percent slopes, very stony	15,220	2.7
HMF	Highsplint-Matewan-Cloverlick association, very steep, extremely stony	8,185	1.5
HuE	Highsplint-Urban land complex, 15 to 35 percent slopes, very stony	1,580	0.3
ImF	Itmann extremely channery sandy loam, very steep	250	*
KcF	Kaymine-Cedarcreek-Matewan complex, very steep, extremely stony	290	*
KfB	Kaymine and Fiveblock soils, 0 to 8 percent slopes, extremely stony	20	*
KfF	Kaymine and Fiveblock soils, 35 to 65 percent slopes, extremely stony	75	*
KrF	Kaymine-Rock outcrop complex, very steep, extremely stony	20	*
LmE	Lily-Matewan complex, 15 to 35 percent slopes, very stony	2,375	0.4
MHF	Matewan-Highsplint-Guyandotte association, very steep, extremely stony	391,370	69.5
MnE	Matewan-Latham complex, 25 to 35 percent slopes	30	*
MPF	Matewan-Pineville-Guyandotte association, very steep, extremely stony	61,340	10.9
PBF	Pineville-Berks association, very steep, extremely stony	17,905	3.2
PnE	Pineville-Lily complex, 15 to 35 percent slopes, very stony	35	*
SbB	Sensabaugh loam, 3 to 8 percent slopes	10	*
SeB	Sensabaugh-Lobdell loams, 2 to 8 percent slopes	4,985	0.9
Ua	Udorthents, earthen dam	160	*
Ub	Udorthents, smoothed	5,525	1.0
UcB	Udorthents-Urban land complex, 0 to 8 percent slopes	11,125	2.0
Ud	Urban land-Chavies complex	595	0.1
Uf	Urban land-Chavies complex, protected	380	*
UkB	Urban land-Kanawha complex, 0 to 8 percent slopes	665	0.1
UnB	Urban land-Kanawha complex, 0 to 8 percent slopes, protected	420	*
UtB	Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes	10	*
W	Water	2,555	0.5
Ye	Yeager fine sandy loam	470	*
	Total	562,800	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the "Percent" column is about 0.3 percent of the survey area.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
AbB		115.00	3.50	7.00	40.00	45.00
Allegheny	2e					
BrG		---	---	---	---	---
Berks	7s					
Rock outcrop	8s					
BSF		---	---	---	---	---
Berks	7s					
Shelocta	7s					
Ch		120.00	3.50	7.00	40.00	45.00
Chavies	1					
Ck		120.00	3.50	7.00	40.00	45.00
Chavies	1					
Cr		70.00	1.50	---	---	25.00
Craigsville	2s					
FkC		---	---	---	---	---
Fiveblock	7s					
Kaymine	7s					
FkF		---	---	---	---	---
Kaymine	7s					
Fiveblock	7s					
GmE		---	---	---	---	---
Gilpin	6s					
Matewan	6s					
Gw		130.00	4.00	8.00	---	40.00
Grigsby	2w					
HgE		---	---	---	---	---
Highsplint	6s					
HMF		---	---	---	---	---
Highsplint	7s					
Matewan	7s					
Cloverlick	7s					
HuE		---	---	---	---	---
Highsplint	6s					
Urban land	---					
ImF		---	---	---	---	---
Itmann	7s					
KcF		---	---	---	---	---
Kaymine	7s					
Cedarcreek	7s					
Matewan	7s					
KfB		---	---	---	---	---
Kaymine	6s					
Fiveblock	6s					

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
KfF		---	---	---	---	---
Kaymine	7s					
Fiveblock	7s					
KrF		---	---	---	---	---
Kaymine	7s					
Rock outcrop	8s					
LmE		---	---	4.50	---	---
Lily	6s					
Matewan	6s					
MHF		---	---	---	---	---
Matewan	7s					
Highsplint	7s					
Guyandotte	7s					
MnE		---	---	---	---	---
Matewan	6e					
Latham	6e					
MPF		---	---	---	---	---
Matewan	7s					
Pineville	7s					
Guyandotte	7s					
PBF		---	---	---	---	---
Pineville	7s					
Berks	7s					
PnE		---	---	---	---	---
Pineville	6s					
Lily	6s					
SbB		100.00	---	7.00	35.00	45.00
Sensabaugh	2e					
SeB		105.00	---	7.00	40.00	45.00
Sensabaugh	2e					
Lobdell	2e					
Ua		---	---	---	---	---
Udorthents	---					
Ub		---	---	---	---	---
Udorthents	---					
UcB		---	---	---	---	---
Udorthents	---					
Urban land	---					
Ud		---	---	---	---	---
Urban land	---					
Chavies	---					
Uf		---	---	---	---	---
Urban land	---					
Chavies	---					
UkB		---	---	---	---	---
Urban land	---					
Kanawha	---					

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Grass-legume hay	Pasture	Soybeans	Wheat
		Bu	Tons	AUM	Bu	Bu
UnB		---	---	---	---	---
Urban land	---					
Kanawha	---					
UtB		---	---	---	---	---
Urban land	---					
Kanawha	---					
Cotaco	---					
Ye		95.00	3.50	6.00	---	30.00
Yeager	2w					

Table 6a.--Agricultural Waste Management (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:					
Allegheny-----------	90	Somewhat limited		Very limited	
		Too acid	0.73	Too acid	1.00
BrG:					
Berks---------------	45	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Depth to bedrock	0.65	Depth to bedrock	0.65
Rock outcrop--------	40	Not rated		Not rated	
BSF:					
Berks---------------	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Depth to bedrock	0.65	Depth to bedrock	0.65
Shelocta------------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32		
Ch:					
Chavies-------------	90	Somewhat limited		Somewhat limited	
		Too acid	0.08	Flooding	0.40
				Too acid	0.31
Ck:					
Chavies-------------	90	Not rated		Not rated	
Cr:					
Craigsville---------	90	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
		Droughty	0.05	Flooding	0.40
				Droughty	0.05
FkC:					
Fiveblock-----------	45	Very limited		Somewhat limited	
		Large stones content	1.00	Cobble content	0.24
		Cobble content	0.24	Droughty	0.01
		Droughty	0.01	Slope	0.01
		Slope	0.01		

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
FkC:					
Kaymine	45	Very limited		Somewhat limited	
		Large stones content	1.00	Droughty	0.09
		Droughty	0.09	Slope	0.01
		Slope	0.01		
FkF:					
Fiveblock	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Cobble content	0.24
		Cobble content	0.24	Droughty	0.01
		Droughty	0.01		
Kaymine	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Droughty	0.09
		Droughty	0.09		
GmE:					
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	1.00	Droughty	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Depth to bedrock	0.65	Too acid	0.91
		Large stones content	0.53	Depth to bedrock	0.65
Matewan	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Droughty	0.99	Droughty	0.99
		Large stones content	0.53	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16
Gw:					
Grigsby	80	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
HgE:					
Highsplint	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Large stones content	0.76	Too acid	0.91
		Too acid	0.32		
HMF:					
Highsplint	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Too acid	0.62		

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
HMF:					
Matewan-------------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.99
		Droughty	0.99	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16
Cloverlick----------	15	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32		
HuE:					
Highsplint----------	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Large stones content	0.76	Too acid	0.91
		Too acid	0.32		
Urban land----------	35	Not rated		Not rated	
ImF:					
Itmann--------------	70	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.94	Too acid	1.00
		Too acid	0.73	Droughty	0.94
KcF:					
Kaymine-------------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Droughty	0.09
		Droughty	0.09		
Cedarcreek----------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	1.00
		Droughty	0.97	Droughty	0.97
		Too acid	0.73		
Matewan-------------	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.98
		Droughty	0.98	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
KfB:					
Kaymine	45	Very limited		Somewhat limited	
		Large stones content	1.00	Cobble content	0.12
		Cobble content	0.12	Droughty	0.09
		Droughty	0.09		
Fiveblock	25	Very limited		Somewhat limited	
		Large stones content	1.00	Droughty	0.11
		Droughty	0.11	Low adsorption	0.05
		Low adsorption	0.05	Cobble content	0.04
		Cobble content	0.04		
KfF:					
Kaymine	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Cobble content	0.12
		Cobble content	0.12	Droughty	0.09
		Droughty	0.09		
Fiveblock	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Cobble content	0.12
		Cobble content	0.12	Droughty	0.11
		Droughty	0.11	Low adsorption	0.05
		Low adsorption	0.05		
KrF:					
Kaymine	65	Very limited		Very limited	
		Large stones content	1.00	Slope	1.00
		Slope	1.00	Droughty	0.09
		Droughty	0.09		
Rock outcrop	15	Not rated		Not rated	
LmE:					
Lily	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Droughty	0.89	Too acid	0.91
		Large stones content	0.76	Droughty	0.89
		Depth to bedrock	0.65	Depth to bedrock	0.65
Matewan	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.98
		Droughty	0.98	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
MHF:					
Matewan	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.98
		Droughty	0.98	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16
Highsplint	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32		
Guyandotte	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32	Droughty	0.01
		Droughty	0.01		
MnE:					
Matewan	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.98
		Droughty	0.98	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16
Latham	30	Not rated		Not rated	
MPF:					
Matewan	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Droughty	0.98
		Droughty	0.98	Too acid	0.91
		Too acid	0.32	Depth to bedrock	0.16
Pineville	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32		

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MPF:					
Guyandotte----------	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32	Droughty	0.01
		Droughty	0.01		
PBF:					
Pineville-----------	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.32		
Berks---------------	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	1.00	Filtering capacity	0.99
		Filtering capacity	0.99	Too acid	0.91
		Depth to bedrock	0.65	Depth to bedrock	0.65
PnE:					
Pineville-----------	60	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Large stones content	0.53	Too acid	0.91
		Too acid	0.32		
Lily----------------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	0.99	Filtering capacity	0.99
		Large stones content	0.53	Too acid	0.91
		Depth to bedrock	0.35	Depth to bedrock	0.35
		Too acid	0.32	Droughty	0.31
SbB:					
Sensabaugh----------	80	Not limited		Somewhat limited	
				Flooding	0.40
SeB:					
Sensabaugh----------	45	Not limited		Somewhat limited	
				Flooding	0.40
Lobdell-------------	35	Very limited		Very limited	
		Depth to saturated zone	0.99	Flooding	1.00
		Flooding	0.60	Depth to saturated zone	0.99
		Too acid	0.02	Too acid	0.07

Table 6a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ua:					
Udorthents----------	100	Not rated		Not rated	
Ub:					
Udorthents----------	95	Not rated		Not rated	
UcB:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
Ud:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
Uf:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
UkB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UnB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UtB:					
Urban land----------	35	Not rated		Not rated	
Kanawha-------------	30	Not rated		Not rated	
Cotaco--------------	25	Not rated		Not rated	
Ye:					
Yeager--------------	75	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Leaching	0.45	Too acid	0.31
		Droughty	0.21	Droughty	0.21
		Too acid	0.08		

Table 6b.--Agricultural Waste Management (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:					
Allegheny-----------	90	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	0.32	Too acid	1.00
BrG:					
Berks---------------	45	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Rock outcrop--------	40	Not rated		Not rated	
BSF:					
Berks---------------	40	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Shelocta------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Ch:					
Chavies-------------	90	Somewhat limited		Very limited	
		Too acid	0.31	Seepage	1.00
				Flooding	0.40
				Too acid	0.31
Ck:					
Chavies-------------	90	Not rated		Very limited	
				Seepage	1.00
				Too acid	0.31

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
Cr:					
Craigsville---------	90	Very limited		Very limited	
		Too acid	0.99	Seepage	1.00
		Droughty	0.05	Too acid	0.99
				Flooding	0.40
FkC:					
Fiveblock-----------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Cobble content	0.24	Too steep for surface application	0.22
		Too steep for sprinkler application	0.10	Stone content	0.01
		Droughty	0.01		
Kaymine-------------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.10	Too steep for surface application	0.22
		Droughty	0.09	Stone content	0.04
FkF:					
Fiveblock-----------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Cobble content	0.24	Stone content	0.01
		Droughty	0.01		
Kaymine-------------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Droughty	0.09	Stone content	0.04
GmE:					
Gilpin--------------	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
GmE:					
Matewan	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.99	Too acid	0.91
		Too acid	0.91	Cobble content	0.37
Gw:					
Grigsby	80	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
				Seepage	1.00
HgE:					
Highsplint	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91	Cobble content	0.08
HMF:					
Highsplint	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
		Filtering capacity	0.99	Cobble content	0.22
Matewan	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.99	Too acid	0.91
		Too acid	0.91	Cobble content	0.37

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HMF:					
Cloverlick----------	15	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91	Cobble content	0.33
HuE:					
Highsplint----------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
				Stone content	0.11
Urban land----------	35	Not rated		Not rated	
ImF:					
Itmann--------------	70	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
		Droughty	0.94		
KcF:					
Kaymine-------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Droughty	0.09	Stone content	0.04
Cedarcreek----------	25	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Droughty	0.97		

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KcF:					
Matewan	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.98	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
KfB:					
Kaymine	45	Somewhat limited		Very limited	
		Cobble content	0.12	Seepage	1.00
		Droughty	0.09	Cobble content	1.00
		Too steep for surface application	0.08		
Fiveblock	25	Somewhat limited		Very limited	
		Droughty	0.11	Seepage	1.00
		Too steep for surface application	0.08	Cobble content	0.43
		Low adsorption	0.05	Low adsorption	0.05
		Cobble content	0.04		
KfF:					
Kaymine	50	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Cobble content	0.12	Cobble content	1.00
		Droughty	0.09		
Fiveblock	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Cobble content	0.12	Cobble content	0.45
		Droughty	0.11	Low adsorption	0.05
		Low adsorption	0.05		
KrF:					
Kaymine	65	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Droughty	0.09	Stone content	0.04
Rock outcrop	15	Not rated		Not rated	

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LmE:					
Lily----------------	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
		Droughty	0.89		
Matewan-------------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.98	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
MHF:					
Matewan-------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.98	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
Highsplint----------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91	Cobble content	0.06
Guyandotte----------	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
		Droughty	0.01		

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
MnE:					
Matewan	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.98	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
Latham	30	Not rated		Very limited	
				Depth to bedrock	1.00
				Too steep for surface application	1.00
				Seepage	1.00
				Too acid	0.99
				Depth to saturated zone	0.95
MPF:					
Matewan	35	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Droughty	0.98	Cobble content	1.00
		Too acid	0.91	Too acid	0.91
Pineville	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Guyandotte	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
		Droughty	0.01		

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
PBF:					
Pineville	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Berks	35	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
PnE:					
Pineville	60	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Filtering capacity	0.99	Too acid	0.91
		Too acid	0.91		
Lily	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Filtering capacity	0.99	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
		Depth to bedrock	0.35		
SbB:					
Sensabaugh	80	Somewhat limited		Very limited	
		Too steep for surface application	0.68	Seepage	1.00
				Flooding	0.40
SeB:					
Sensabaugh	45	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Flooding	0.40

Table 6b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SeB:					
Lobdell	35	Very limited		Very limited	
		Depth to saturated zone	0.99	Flooding	1.00
		Flooding	0.60	Seepage	1.00
		Too steep for surface application	0.32	Depth to saturated zone	0.99
		Too acid	0.07	Too acid	0.07
Ua:					
Udorthents	100	Not rated		Not rated	
Ub:					
Udorthents	95	Not rated		Not rated	
UcB:					
Udorthents	50	Not rated		Not rated	
Urban land	40	Not rated		Not rated	
Ud:					
Urban land	45	Not rated		Not rated	
Chavies	30	Not rated		Not rated	
Uf:					
Urban land	45	Not rated		Not rated	
Chavies	30	Not rated		Not rated	
UkB:					
Urban land	45	Not rated		Not rated	
Kanawha	35	Not rated		Not rated	
UnB:					
Urban land	45	Not rated		Not rated	
Kanawha	35	Not rated		Not rated	
UtB:					
Urban land	35	Not rated		Not rated	
Kanawha	30	Not rated		Not rated	
Cotaco	25	Not rated		Not rated	
Ye:					
Yeager	75	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Too acid	0.31	Seepage	1.00
		Droughty	0.21	Too acid	0.31

Table 6c.--Agricultural Waste Management (Part 3)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:					
Allegheny	90	Very limited		Very limited	
		Slow water movement	1.00	Too acid	1.00
		Too acid	0.14	Too steep for surface application	0.32
		Slope	0.12		
BrG:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
		Too acid	0.14	Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
Rock outcrop	40	Not rated		Not rated	
BSF:					
Berks	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
		Too acid	0.14	Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
Shelocta	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.21	Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
Ch:					
Chavies	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.32	Too acid	0.31
Ck:					
Chavies	90	Somewhat limited		Not rated	
		Slow water movement	0.32		
Cr:					
Craigsville	90	Not limited		Very limited	
				Too acid	0.99

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
FkC:					
Fiveblock-----------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	0.02	Cobble content	0.24
				Too steep for sprinkler irrigation	0.22
Kaymine-------------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.56	Too steep for sprinkler irrigation	0.22
		Stone content	0.05		
FkF:					
Fiveblock-----------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	0.02	Too steep for sprinkler irrigation	1.00
				Cobble content	0.24
Kaymine-------------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.56	Too steep for sprinkler irrigation	1.00
		Stone content	0.05		
GmE:					
Gilpin--------------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91
Matewan-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.37	Too steep for sprinkler irrigation	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
Gw:					
Grigsby-------------	80	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Flooding	0.60
		Slow water movement	0.62		
		Flooding	0.60		
HgE:					
Highsplint----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.58		
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
		Too acid	0.03		
				Filtering capacity	0.99
				Too acid	0.91
HMF:					
Highsplint----------	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.49		
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
		Too acid	0.03		
				Too acid	1.00
				Filtering capacity	0.99
Matewan-------------	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.37		
		Too acid	0.07		
				Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
Cloverlick----------	15	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Cobble content	0.84	Too steep for sprinkler irrigation	1.00
		Too acid	0.14		
				Filtering capacity	0.99
				Too acid	0.91

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
HuE:					
Highsplint----------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Filtering capacity	0.99
		Stone content	0.14	Too acid	0.91
		Too acid	0.03		
Urban land----------	35	Not rated		Not rated	
ImF:					
Itmann--------------	70	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Too acid	0.14	Too steep for sprinkler irrigation	1.00
				Too acid	1.00
KcF:					
Kaymine-------------	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.56	Too steep for sprinkler irrigation	1.00
		Stone content	0.05		
Cedarcreek----------	25	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
		Too acid	0.14	Too acid	1.00
Matewan-------------	20	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91
KfB:					
Kaymine-------------	45	Very limited		Somewhat limited	
		Cobble content	1.00	Cobble content	0.12
		Slow water movement	0.56	Too steep for surface application	0.08

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
KfB:					
Fiveblock-----------	25	Very limited		Somewhat limited	
		Slow water movement	0.99	Too steep for surface application	0.08
		Cobble content	0.46	Low adsorption	0.05
				Cobble content	0.04
KfF:					
Kaymine-------------	50	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.56	Cobble content	0.12
Fiveblock-----------	25	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.99	Too steep for sprinkler irrigation	1.00
		Cobble content	0.47	Cobble content	0.12
				Low adsorption	0.05
KrF:					
Kaymine-------------	65	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.56	Too steep for sprinkler irrigation	1.00
		Stone content	0.05		
Rock outcrop--------	15	Not rated		Not rated	
LmE:					
Lily----------------	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
Matewan-------------	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
MHF:					
Matewan	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91
Highsplint	30	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
		Cobble content	0.17	Filtering capacity	0.99
		Too acid	0.03	Too acid	0.91
Guyandotte	20	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
				Filtering capacity	0.99
				Too acid	0.91
MnE:					
Matewan	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.07	Filtering capacity	0.99
				Too acid	0.91
Latham	30	Very limited		Not rated	
		Slope	1.00		
		Slow water movement	1.00		
		Depth to bedrock	1.00		
		Depth to saturated zone	0.95		
		Too acid	0.42		

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
MPF:					
Matewan	35	Very limited Slope Depth to bedrock Cobble content Too acid	 1.00 1.00 1.00 0.07	Very limited Depth to bedrock Too steep for surface application Too steep for sprinkler irrigation Filtering capacity Too acid	 1.00 1.00 1.00 0.99 0.91
Pineville	25	Very limited Slope Slow water movement Too acid	 1.00 1.00 0.14	Very limited Too steep for surface application Too steep for sprinkler irrigation Filtering capacity Too acid	 1.00 1.00 0.99 0.91
Guyandotte	20	Very limited Slope Slow water movement	 1.00 0.62	Very limited Too steep for surface application Too steep for sprinkler irrigation Filtering capacity Too acid	 1.00 1.00 0.99 0.91
PBF:					
Pineville	40	Very limited Slope Slow water movement Too acid	 1.00 1.00 0.14	Very limited Too steep for surface application Too steep for sprinkler irrigation Filtering capacity Too acid	 1.00 1.00 0.99 0.91
Berks	35	Very limited Slope Depth to bedrock Slow water movement Too acid	 1.00 1.00 0.62 0.14	Very limited Depth to bedrock Too steep for surface application Too steep for sprinkler irrigation Filtering capacity Too acid	 1.00 1.00 1.00 0.99 0.91

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
PnE:					
Pineville-----------	60	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.14	Filtering capacity	0.99
				Too acid	0.91
Lily----------------	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
		Too acid	0.14	Filtering capacity	0.99
				Too acid	0.91
SbB:					
Sensabaugh----------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Too steep for surface application	0.68
		Slope	0.50		
SeB:					
Sensabaugh----------	45	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Too steep for surface application	0.32
		Slow water movement	0.50		
		Slope	0.12		
Lobdell-------------	35	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.07
Ua:					
Udorthents----------	100	Not rated		Not rated	
Ub:					
Udorthents----------	95	Not rated		Not rated	
UcB:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	

Table 6c.--Agricultural Waste Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ud:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
Uf:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
UkB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UnB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UtB:					
Urban land----------	35	Not rated		Not rated	
Kanawha-------------	30	Not rated		Not rated	
Cotaco--------------	25	Not rated		Not rated	
Ye:					
Yeager--------------	75	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Flooding	0.60
		Flooding	0.60	Too acid	0.31

Table 7.--Forest Productivity

(Only the soils suitable for production of commercial trees are listed.)

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
AbB:				
Allegheny------	Black oak-----------	78	57	---
	Northern red oak----	80	57	
	White oak-----------	70	57	
	Yellow-poplar-------	93	---	
BrG:				
Berks----------	Virginia pine-------	60	86	---
	Black oak-----------	60	43	
	Northern red oak----	60	43	
	White oak-----------	60	43	
Rock outcrop---	--------------------	---	---	---
BSF:				
Berks----------	Virginia pine-------	60	86	---
	Black oak-----------	60	43	
	Northern red oak----	60	43	
	White oak-----------	60	43	
Shelocta-------	Black oak-----------	85	---	---
	Northern red oak----	86	72	
	Yellow-poplar-------	108	---	
Ch:				
Chavies--------	Northern red oak----	80	57	---
	Yellow-poplar-------	93	---	
Ck:				
Chavies--------	Northern red oak----	80	57	---
	Yellow-poplar-------	93	---	
Cr:				
Craigsville----	Virginia pine-------	80	---	---
	Eastern white pine--	90	---	
	Northern red oak----	75	57	
	Yellow-poplar-------	90	---	
FkC:				
Fiveblock------	American sycamore---	90	---	---
	Eastern white pine--	94	---	
	Northern red oak----	80	57	
	Yellow-poplar-------	105	---	
Kaymine--------	American sycamore---	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine--	94	---	
	Northern red oak----	80	57	
	Yellow-poplar-------	105	---	
FkF:				
Fiveblock------	American sycamore---	90	---	---
	Eastern white pine--	94	---	
	Northern red oak----	80	57	
	Yellow-poplar-------	105	---	

Table 7.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
FkF:				
Kaymine	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
GmE:				
Gilpin	Virginia pine	71	80	Virginia pine, black cherry, eastern white pine, yellow-poplar.
	Black oak	74	55	
	Chestnut oak	67	49	
	Northern red oak	73	57	
	Yellow-poplar	89	89	
Matewan	Black oak	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak	70	52	
	Scarlet oak	73	54	
	Yellow-poplar	85	57	
Gw:				
Grigsby	Northern red oak	85	57	Black walnut, eastern white pine, northern red oak, shortleaf pine, white ash, white oak, yellow-poplar.
	White oak	85	57	
	Yellow-poplar	110	---	
HgE:				
Highsplint	Yellow-poplar	100	---	Eastern white pine, northern red oak, shortleaf pine, yellow-poplar.
HMF:				
Highsplint	Yellow-poplar	100	---	Eastern white pine, northern red oak, shortleaf pine, white oak, yellow-poplar.
Matewan	Virginia pine	70	---	Japanese larch, Norway spruce, Virginia pine, eastern white pine, red pine.
	Black cherry	80	57	
	Black oak	70	57	
	Chestnut oak	76	57	
	Northern red oak	75	57	
	Scarlet oak	76	57	
Cloverlick	Northern red oak	85	72	Eastern white pine, northern red oak, shortleaf pine, white ash, yellow-poplar.
	Yellow-poplar	110	---	

Table 7.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
HuE:				
Highsplint	Yellow-poplar	100	---	Eastern white pine, northern red oak, shortleaf pine, yellow-poplar.
Urban land	---	---	---	---
ImF:				
Itmann	---	---	---	---
KcF:				
Kaymine	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
Cedarcreek	American sycamore	90	---	---
	Black locust	100	---	
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
Matewan	Black oak	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak	70	52	
	Scarlet oak	73	54	
	Yellow-poplar	85	57	
KfB:				
Kaymine	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
Fiveblock	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
KfF:				
Kaymine	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	
Fiveblock	American sycamore	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine	94	---	
	Northern red oak	80	57	
	Yellow-poplar	105	---	

Table 7.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
KrF:				
Kaymine--------	American sycamore---	90	---	Virginia pine, black locust, eastern white pine, red maple, yellow-poplar.
	Eastern white pine--	94	---	
	Northern red oak----	80	57	
	Yellow-poplar-------	105	---	
Rock outcrop---	-------------------	---	---	---
LmE:				
Lily-----------	Chestnut oak--------	76	57	---
	Northern red oak----	75	57	
	Scarlet oak---------	76	57	
Matewan--------	Black oak-----------	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak----	70	52	
	Scarlet oak---------	73	54	
	Yellow-poplar-------	85	57	
MHF:				
Matewan--------	Black oak-----------	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak----	70	52	
	Scarlet oak---------	73	54	
	Yellow-poplar-------	85	57	
Highsplint-----	Yellow-poplar ------	100	---	Eastern white pine, northern red oak, shortleaf pine, yellow-poplar.
MHF:				
Guyandotte-----	American basswood---	99	57	Black cherry, black walnut, eastern white pine.
	Black cherry--------	86	57	
	Black locust--------	85	---	
	Northern red oak----	85	72	
	Yellow-poplar-------	104	---	
MnE:				
Matewan--------	Black oak-----------	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak----	70	52	
	Scarlet oak---------	73	54	
	Yellow-poplar-------	85	57	
Latham---------	Northern red oak----	68	57	Virginia pine, eastern white pine, northern red oak, white ash, white oak.
MPF:				
Matewan--------	Black oak-----------	72	53	Japanese larch, Norway spruce, Virginia pine, eastern white pine.
	Northern red oak----	70	52	
	Scarlet oak---------	73	54	
	Yellow-poplar-------	85	57	

Table 7.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
MPF:				
Pineville------	Black oak-----------	85	57	Black walnut, eastern white pine, northern red oak, yellow-poplar.
	Northern red oak----	86	72	
	Yellow-poplar-------	108	---	
Guyandotte-----	American basswood---	99	57	Black cherry, black walnut, eastern white pine.
	Black cherry--------	86	57	
	Black locust--------	85	---	
	Northern red oak----	85	72	
	Yellow-poplar-------	104	---	
PBF:				
Pineville------	Black oak-----------	85	57	Black walnut, eastern white pine, northern red oak, yellow-poplar.
	Northern red oak----	86	72	
	Yellow-poplar-------	108	---	
PBF:				
Berks----------	Virginia pine-------	60	86	---
	Black oak-----------	60	43	
	Northern red oak----	60	43	
	White oak-----------	60	43	
PnE:				
Pineville------	Yellow-poplar-------	112	---	---
	Black oak-----------	85	---	
	Northern red oak----	86	72	
Lily-----------	Black oak-----------	85	---	---
	Chestnut oak--------	76	---	
	Northern red oak----	84	---	
	Scarlet oak---------	90	---	
	Yellow-poplar-------	95	---	
SbB:				
Sensabaugh-----	Virginia pine-------	75	---	Black walnut, loblolly pine, yellow-poplar.
	Shortleaf pine------	80	---	
	White oak-----------	80	57	
	Yellow-poplar-------	100	---	
SeB:				
Sensabaugh-----	Virginia pine-------	75	---	Black walnut, loblolly pine, yellow-poplar.
	Shortleaf pine------	80	---	
	White oak-----------	80	57	
	Yellow-poplar-------	100	---	
Lobdell--------	Yellow-poplar-------	96	---	
	Northern red oak----	87	72	
Ua:				
Udorthents-----	-------------------	---	---	---
Ub:				
Udorthents-----	-------------------	---	---	---
UcB:				
Udorthents-----	-------------------	---	---	---

Table 7.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
UcB:				
Urban land	---	---	---	---
Ud:				
Urban land	---	---	---	---
Chavies	Yellow-poplar	93	---	---
	Northern red oak	80	57	
Uf:				
Urban land	---	---	---	---
Chavies	Yellow-poplar	93	---	---
	Northern red oak	80	57	
UkB:				
Urban land	---	---	---	---
Kanawha	Black oak	80	57	Norway spruce, black locust, black walnut, eastern white pine.
	Yellow-poplar	90	86	
	White ash	80	57	
	Blackjack oak	80	57	
	Northern red oak	80	57	
UnB:				
Urban land	---	---	---	---
Kanawha	Yellow-poplar	90	86	Norway spruce, black locust, black walnut, eastern white pine.
	Black oak	80	57	
	White ash	80	57	
	Blackjack oak	80	57	
	Northern red oak	80	57	
UtB:				
Urban land	---	---	---	---
Kanawha	Black oak	80	57	Norway spruce, black locust, black walnut, eastern white pine.
	Blackjack oak	80	57	
	Northern red oak	80	57	
	White ash	80	57	
	Yellow-poplar	90	86	
Cotaco	Virginia pine	81	---	Eastern white pine, sweetgum, white oak, yellow-poplar.
	Black oak	87	72	
	Northern red oak	80	57	
	Yellow-poplar	95	---	
Ye:				
Yeager	Sweetgum	90	---	Eastern white pine, northern red oak, sweetgum, white oak, yellow-poplar
	Yellow-poplar	90	86	

Table 8a.--Forest Management (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
BrG:							
Berks---------------	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Shelocta------------	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Ch:							
Chavies-------------	90	Slight		Well suited		Moderate	
						Low strength	0.50
Ck:							
Chavies-------------	90	Slight		Well suited		Moderate	
						Low strength	0.50
Cr:							
Craigsville---------	90	Slight		Well suited		Moderate	
						Low strength	0.50
FkC:							
Fiveblock-----------	45	Moderate		Moderately suited		Moderate	
		Stoniness	0.50	Slope	0.50	Low strength	0.50
		Sandiness	0.50	Rock fragments	0.50		
				Sandiness	0.50		
Kaymine-------------	45	Moderate		Moderately suited		Severe	
		Stoniness	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Rock fragments	0.50		
				Low strength	0.50		
FkF:							
Fiveblock-----------	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
				Sandiness	0.50		
Kaymine-------------	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		

Table 8a.--Forest Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
GmE:							
Gilpin	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Matewan	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50				
Gw:							
Grigsby	80	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
HgE:							
Highsplint	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
HMF:							
Highsplint	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Matewan	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
Cloverlick	15	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
HuE:							
Highsplint	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Urban land	35	Not rated		Not rated		Not rated	
ImF:							
Itmann	70	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
				Sandiness	0.50		
KcF:							
Kaymine	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Cedarcreek	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Matewan	20	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		

Table 8a.--Forest Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KfB:							
Kaymine-------------	45	Moderate		Moderately suited		Moderate	
		Stoniness	0.50	Rock fragments	0.50	Low strength	0.50
Fiveblock-----------	25	Moderate		Moderately suited		Moderate	
		Stoniness	0.50	Rock fragments	0.50	Low strength	0.50
KfF:							
Kaymine-------------	50	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Fiveblock-----------	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
KrF:							
Kaymine-------------	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Rock outcrop--------	15	Not rated		Not rated		Not rated	
LmE:							
Lily----------------	50	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
Matewan-------------	30	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
MHF:							
Matewan-------------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Highsplint----------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Guyandotte----------	20	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
MnE:							
Matewan-------------	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Latham--------------	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
				Low strength	0.50		
MPF:							
Matewan-------------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		

Table 8a.--Forest Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
MPF:							
Pineville	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Guyandotte	20	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
PBF:							
Pineville	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
Berks	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
		Low strength	0.50	Low strength	0.50		
PnE:							
Pineville	60	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Lily	25	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
SbB:							
Sensabaugh	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
SeB:							
Sensabaugh	45	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Lobdell	35	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
		Wetness	0.50				
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Slight		Well suited		Moderate	
						Low strength	0.50

Table 8a.--Forest Management (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Uf:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Slight		Well suited		Moderate	
						Low strength	0.50
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
UtB:							
Urban land	35	Not rated		Not rated		Not rated	
Kanawha	30	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Cotaco	25	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Ye:							
Yeager	75	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50

Table 8b.--Forest Management (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
BrG:							
Berks---------------	45	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Shelocta------------	35	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Ch:							
Chavies-------------	90	Slight		Slight		Well suited	
Ck:							
Chavies-------------	90	Slight		Slight		Well suited	
Cr:							
Craigsville---------	90	Slight		Slight		Well suited	
FkC:							
Fiveblock-----------	45	Slight		Moderate		Moderately suited	
				Slope	0.50	Slope	0.50
				Erodibility	0.50	Rock fragments	0.50
						Sandiness	0.50
Kaymine-------------	45	Slight		Moderate		Moderately suited	
				Slope	0.50	Slope	0.50
				Erodibility	0.50	Rock fragments	0.50
						Low strength	0.50
FkF:							
Fiveblock-----------	45	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Sandiness	0.50
Kaymine-------------	45	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
GmE:							
Gilpin--------------	40	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95	Low strength	0.50

Table 8b.--Forest Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
GmE:							
Matewan	35	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95		
Gw:							
Grigsby	80	Slight		Slight		Poorly suited	
						Flooding	1.00
HgE:							
Highsplint	80	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95	Low strength	0.50
HMF:							
Highsplint	35	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Matewan	25	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
Cloverlick	15	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
HuE:							
Highsplint	45	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95	Low strength	0.50
Urban land	35	Not rated		Not rated		Not rated	
ImF:							
Itmann	70	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Sandiness	0.50
KcF:							
Kaymine	35	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Cedarcreek	25	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
Matewan	20	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
KfB:							
Kaymine	45	Slight		Moderate		Moderately suited	
				Slope	0.50	Rock fragments	0.50
				Erodibility	0.50		
Fiveblock	25	Slight		Moderate		Moderately suited	
				Slope	0.50	Rock fragments	0.50
				Erodibility	0.50		

Table 8b.--Forest Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
KfF:							
Kaymine	50	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
Fiveblock	25	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
KrF:							
Kaymine	65	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95		
Matewan	30	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
MHF:							
Matewan	35	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
Highsplint	30	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Guyandotte	20	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
MnE:							
Matewan	45	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
Latham	30	Severe		Severe		Poorly suited	
		Slope	0.75	Slope	0.95	Slope	1.00
		Erodibility	0.75	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
MPF:							
Matewan	35	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
Pineville	25	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50

Table 8b.--Forest Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
MPF:							
Guyandotte----------	20	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
PBF:							
Pineville-----------	40	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
Berks---------------	35	Very severe		Severe		Poorly suited	
		Slope	0.95	Slope	0.95	Slope	1.00
		Erodibility	0.95	Erodibility	0.95	Rock fragments	0.50
						Low strength	0.50
PnE:							
Pineville-----------	60	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95	Low strength	0.50
Lily----------------	25	Moderate		Severe		Poorly suited	
		Slope	0.50	Slope	0.95	Slope	1.00
		Erodibility	0.50	Erodibility	0.95	Low strength	0.50
SbB:							
Sensabaugh----------	80	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50	Slope	0.50
SeB:							
Sensabaugh----------	45	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
Lobdell-------------	35	Slight		Moderate		Poorly suited	
				Slope	0.50	Flooding	1.00
				Erodibility	0.50	Low strength	0.50
Ua:							
Udorthents----------	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents----------	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents----------	50	Not rated		Not rated		Not rated	
Urban land----------	40	Not rated		Not rated		Not rated	
Ud:							
Urban land----------	45	Not rated		Not rated		Not rated	
Chavies-------------	30	Slight		Slight		Well suited	
Uf:							
Urban land----------	45	Not rated		Not rated		Not rated	
Chavies-------------	30	Slight		Slight		Well suited	

Table 8b.--Forest Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
UtB:							
Urban land	35	Not rated		Not rated		Not rated	
Kanawha	30	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
Cotaco	25	Slight		Moderate		Moderately suited	
				Slope	0.50	Low strength	0.50
				Erodibility	0.50		
Ye:							
Yeager	75	Slight		Slight		Poorly suited	
						Flooding	1.00

Table 8c.--Forest Management (Part 3)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
BrG:							
Berks---------------	45	Poorly suited		Unsuited		Poorly suited	
		Slope	0.75	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Shelocta------------	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Ch:							
Chavies-------------	90	Well suited		Well suited		Well suited	
Ck:							
Chavies-------------	90	Well suited		Well suited		Well suited	
Cr:							
Craigsville---------	90	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
FkC:							
Fiveblock-----------	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
				Slope	0.50		
Kaymine-------------	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
				Slope	0.50	Low strength	0.50
FkF:							
Fiveblock-----------	45	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
		Sandiness	0.50	Sandiness	0.50	Sandiness	0.50
Kaymine-------------	45	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50

Table 8c.--Forest Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
GmE:							
Gilpin	40	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Matewan	35	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		
Gw:							
Grigsby	80	Well suited		Well suited		Well suited	
HgE:							
Highsplint	80	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
HMF:							
Highsplint	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Matewan	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Cloverlick	15	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
HuE:							
Highsplint	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Urban land	35	Not rated		Not rated		Not rated	
ImF:							
Itmann	70	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	0.50	Sandiness	0.50
				Sandiness	0.50		
KcF:							
Kaymine	35	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Cedarcreek	25	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
Matewan	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50

Table 8c.--Forest Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
KfB:							
Kaymine	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Fiveblock	25	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
KfF:							
Kaymine	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Fiveblock	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
KrF:							
Kaymine	65	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		
Matewan	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
MHF:							
Matewan	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Highsplint	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Guyandotte	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
MnE:							
Matewan	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Latham	30	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Slope	1.00	Rock fragments	0.50
		Stickiness	0.50	Rock fragments	0.75	Low strength	0.50
		High plasticity index	0.50	Stickiness	0.50	Slope	0.50
				High plasticity index	0.50		

Table 8c.--Forest Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
MPF:							
Matewan	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Pineville	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Guyandotte	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
PBF:							
Pineville	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
Berks	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
						Low strength	0.50
PnE:							
Pineville	60	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Lily	25	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
SbB:							
Sensabaugh	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
SeB:							
Sensabaugh	45	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
Lobdell	35	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
						Wetness	0.50
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Well suited		Well suited		Well suited	

Table 8c.--Forest Management (Part 3)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Uf:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Well suited		Well suited		Well suited	
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Well suited		Well suited		Moderately suited Low strength	 0.50
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Well suited		Well suited		Moderately suited Low strength	 0.50
UtB:							
Urban land	35	Not rated		Not rated		Not rated	
Kanawha	30	Well suited		Well suited		Moderately suited Low strength	 0.50
Cotaco	25	Well suited		Well suited		Moderately suited Low strength	 0.50
Ye:							
Yeager	75	Well suited		Well suited		Well suited	

Table 8d.--Forest Management (Part 4)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:					
Allegheny	90	Well suited		Well suited	
BrG:					
Berks	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Rock outcrop	40	Not rated		Not rated	
BSF:					
Berks	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Shelocta	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Ch:					
Chavies	90	Well suited		Well suited	
Ck:					
Chavies	90	Well suited		Well suited	
Cr:					
Craigsville	90	Well suited		Well suited	
FkC:					
Fiveblock	45	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
Kaymine	45	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
FkF:					
Fiveblock	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Kaymine	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
GmE:					
Gilpin	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
Matewan	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Gw:					
Grigsby	80	Well suited		Well suited	

Table 8d.--Forest Management (Part 4)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HgE:					
Highsplint----------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
HMF:					
Highsplint----------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Matewan-------------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Cloverlick----------	15	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
HuE:					
Highsplint----------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Urban land----------	35	Not rated		Not rated	
ImF:					
Itmann--------------	70	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
KcF:					
Kaymine-------------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Cedarcreek----------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Matewan-------------	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
KfB:					
Kaymine-------------	45	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
Fiveblock-----------	25	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
KfF:					
Kaymine-------------	50	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Fiveblock-----------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50

Table 8d.--Forest Management (Part 4)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KrF:					
Kaymine------------	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Rock outcrop--------	15	Not rated		Not rated	
LmE:					
Lily----------------	50	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Matewan-------------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
MHF:					
Matewan-------------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Highsplint----------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Guyandotte----------	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
MnE:					
Matewan-------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Latham--------------	30	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
MPF:					
Matewan-------------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Pineville-----------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Guyandotte----------	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
PBF:					
Pineville-----------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Berks---------------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50

Table 8d.--Forest Management (Part 4)--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PnE:					
Pineville-----------	60	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Lily----------------	25	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
SbB:					
Sensabaugh----------	80	Well suited		Well suited	
SeB:					
Sensabaugh----------	45	Well suited		Well suited	
Lobdell-------------	35	Well suited		Well suited	
Ua:					
Udorthents----------	100	Not rated		Not rated	
Ub:					
Udorthents----------	95	Not rated		Not rated	
UcB:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
Ud:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Well suited		Well suited	
Uf:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Well suited		Well suited	
UkB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Well suited		Well suited	
UnB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Well suited		Well suited	
UtB:					
Urban land----------	35	Not rated		Not rated	
Kanawha-------------	30	Well suited		Well suited	
Cotaco--------------	25	Well suited		Well suited	
Ye:					
Yeager--------------	75	Well suited		Well suited	

Table 8e.--Forest Management (Part 5)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:					
Allegheny-----------	90	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
BrG:					
Berks---------------	45	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Rock outcrop--------	40	Not rated		Not rated	
BSF:					
Berks---------------	40	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Shelocta------------	35	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Ch:					
Chavies-------------	90	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Ck:					
Chavies-------------	90	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Cr:					
Craigsville---------	90	Low		Low	
FkC:					
Fiveblock-----------	45	Low		Low	
Kaymine-------------	45	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Surface depth	1.00		
		Rock fragments	1.00		
FkF:					
Fiveblock-----------	45	Low		Low	
Kaymine-------------	45	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		

Table 8e.--Forest Management (Part 5)--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
GmE:					
Gilpin-------------	40	Low		Low	
Matewan------------	35	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Gw:					
Grigsby------------	80	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
HgE:					
Highsplint---------	80	Low		Low	
HMF:					
Highsplint---------	35	Low		Low	
Matewan------------	25	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Cloverlick---------	15	Low		Low	
HuE:					
Highsplint---------	45	Low		Low	
Urban land---------	35	Not rated		Not rated	
ImF:					
Itmann-------------	70	Low		Low	
KcF:					
Kaymine------------	35	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		
Cedarcreek---------	25	High		Low	
		Texture	1.00		
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		
Matewan------------	20	Low		Low	
KfB:					
Kaymine------------	45	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Surface depth	1.00		
		Rock fragments	1.00		
Fiveblock----------	25	High		Low	
		Texture	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		

Table 8e.--Forest Management (Part 5)--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
KfF:					
Kaymine	50	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		
Fiveblock	25	High		Low	
		Texture	1.00		
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		
KrF:					
Kaymine	65	High		Moderate	
		Texture	1.00	Soil reaction	0.50
		Slope	1.00		
		Surface depth	1.00		
		Rock fragments	1.00		
Rock outcrop	15	Not rated		Not rated	
LmE:					
Lily	50	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Matewan	30	Low		Low	
MHF:					
Matewan	35	Low		Low	
Highsplint	30	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Guyandotte	20	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
MnE:					
Matewan	45	Low		Low	
Latham	30	Moderate		Moderate	
		Texture	0.50	Soil reaction	0.50
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
MPF:					
Matewan	35	Low		Low	
Pineville	25	Low		Low	
Guyandotte	20	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		

Table 8e.--Forest Management (Part 5)--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PBF:					
Pineville-----------	40	Low		Low	
Berks---------------	35	Moderate		Low	
		Texture	0.50		
		Slope	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
PnE:					
Pineville-----------	60	Moderate		Low	
		Texture	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
Lily----------------	25	Moderate		Low	
		Texture	0.50		
		Surface depth	0.50		
		Rock fragments	0.50		
SbB:					
Sensabaugh----------	80	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
SeB:					
Sensabaugh----------	45	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Lobdell-------------	35	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Ua:					
Udorthents----------	100	Not rated		Not rated	
Ub:					
Udorthents----------	95	Not rated		Not rated	
UcB:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
Ud:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Uf:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
UkB:					
Urban land----------	45	Not rated		Not rated	

Table 8e.--Forest Management (Part 5)--Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UkB:					
Kanawha	35	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
UnB:					
Urban land	45	Not rated		Not rated	
Kanawha	35	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
UtB:					
Urban land	35	Not rated		Not rated	
Kanawha	30	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Cotaco	25	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		
Ye:					
Yeager	75	Low		Low	
		Texture	0.10		
		Rock fragments	0.10		

Table 9a.--Recreational Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny	90	Not limited		Not limited		Somewhat limited	
						Slope	0.88
BrG:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65
Rock outcrop	40	Not rated		Not rated		Not rated	
BSF:							
Berks	40	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
Ch:							
Chavies	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Gravel content	0.04
Ck:							
Chavies	90	Not rated		Not rated		Not rated	
Cr:							
Craigsville	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Gravel content	1.00	Gravel content	1.00
		Gravel content	1.00				
FkC:							
Fiveblock	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.99	Gravel content	0.99	Gravel content	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
Kaymine	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
FkF:							
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.99	Gravel content	0.99	Gravel content	1.00

Table 9a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
FkF:							
Kaymine	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
GmE:							
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Depth to bedrock	0.65
						Large stones content	0.53
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53
						Depth to bedrock	0.16
Gw:							
Grigsby	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
HgE:							
Highsplint	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
HMF:							
Highsplint	35	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
Matewan	25	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.16
Cloverlick	15	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
HuE:							
Highsplint	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
Urban land	35	Not rated		Not rated		Not rated	
ImF:							
Itmann	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00

Table 9a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
KcF:							
Kaymine	35	Very limited Slope Large stones content Gravel content	 1.00 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00
Cedarcreek	25	Very limited Slope Large stones content Gravel content	 1.00 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00	Very limited Large stones content Gravel content Slope	 1.00 1.00 1.00
Matewan	20	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.16
KfB:							
Kaymine	45	Very limited Large stones content	 1.00	Very limited Large stones content	 1.00	Very limited Large stones content Gravel content Slope	 1.00 0.78 0.50
Fiveblock	25	Very limited Large stones content	 1.00	Very limited Large stones content	 1.00	Very limited Large stones content Gravel content Slope	 1.00 0.93 0.50
KfF:							
Kaymine	50	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 0.78
Fiveblock	25	Very limited Slope Large stones content Gravel content	 1.00 1.00 0.38	Very limited Large stones content Slope Gravel content	 1.00 1.00 0.38	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00
KrF:							
Kaymine	65	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00	Very limited Large stones content Slope Gravel content	 1.00 1.00 1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Very limited Slope Large stones content	 1.00 0.76	Very limited Slope Large stones content	 1.00 0.76	Very limited Slope Large stones content Depth to bedrock	 1.00 0.76 0.65

Table 9a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
LmE:							
Matewan-------------	30	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.16
MHF:							
Matewan-------------	35	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.16
Highsplint----------	30	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00
Guyandotte----------	20	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00
MnE:							
Matewan-------------	45	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.16
Latham--------------	30	Not rated		Not rated		Not rated	
MPF:							
Matewan-------------	35	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.16
Pineville-----------	25	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00
Guyandotte----------	20	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00
PBF:							
Pineville-----------	40	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00
Berks---------------	35	Very limited Slope Large stones content	 1.00 1.00	Very limited Large stones content Slope	 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	 1.00 1.00 0.65

Table 9a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
PnE:							
Pineville	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53
Lily	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53
						Depth to bedrock	0.35
SbB:							
Sensabaugh	80	Very limited		Not limited		Very limited	
		Flooding	1.00			Slope	1.00
						Gravel content	0.20
SeB:							
Sensabaugh	45	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.88
						Gravel content	0.62
Lobdell	35	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.22	Slope	0.88
		Depth to saturated zone	0.44			Flooding	0.60
						Depth to saturated zone	0.44
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
Uf:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	

Table 9a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UtB:							
Urban land	35	Not rated		Not rated		Not rated	
Kanawha	30	Not rated		Not rated		Not rated	
Cotaco	25	Not rated		Not rated		Not rated	
Ye:							
Yeager	75	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60

Table 9b.--Recreational Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Not limited		Not limited		Not limited	
BrG:							
Berks---------------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.98
		Slope	1.00	Slope	1.00	Depth to bedrock	0.65
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.98
		Slope	1.00	Slope	1.00	Depth to bedrock	0.65
Shelocta------------	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
Ch:							
Chavies-------------	90	Not limited		Not limited		Not limited	
Ck:							
Chavies-------------	90	Not rated		Not rated		Not rated	
Cr:							
Craigsville---------	90	Not limited		Not limited		Very limited	
						Gravel content	1.00
						Droughty	0.05
FkC:							
Fiveblock-----------	45	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.99
						Large stones content	0.79
						Droughty	0.09
						Slope	0.01
Kaymine-------------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	1.00
						Droughty	0.28
						Large stones content	0.01
						Slope	0.01
FkF:							
Fiveblock-----------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.99
						Large stones content	0.79
						Droughty	0.09

Table 9b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
FkF:							
Kaymine-------------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
						Droughty	0.28
						Large stones content	0.01
GmE:							
Gilpin--------------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.53	Slope	1.00
		Large stones content	0.53	Slope	0.22	Droughty	1.00
						Depth to bedrock	0.65
Matewan-------------	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.53	Slope	1.00
		Large stones content	0.53	Slope	0.22	Droughty	0.48
						Depth to bedrock	0.16
Gw:							
Grigsby-------------	80	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
HgE:							
Highsplint----------	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76				
HMF:							
Highsplint----------	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
Matewan-------------	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.44
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
Cloverlick----------	15	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
HuE:							
Highsplint----------	45	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76				
Urban land----------	35	Not rated		Not rated		Not rated	
ImF:							
Itmann--------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
						Droughty	0.98

Table 9b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
KcF:							
Kaymine	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Gravel content	1.00
		Slope	1.00	Slope	1.00	Droughty	0.28
						Large stones content	0.01
Cedarcreek	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Gravel content	1.00
		Slope	1.00	Slope	1.00	Droughty	0.99
Matewan	20	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.28
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
KfB:							
Kaymine	45	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	0.68
						Droughty	0.29
Fiveblock	25	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	0.54
						Droughty	0.34
KfF:							
Kaymine	50	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Large stones content	0.68
		Slope	1.00	Slope	1.00		
						Droughty	0.29
Fiveblock	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Large stones content	0.68
		Slope	1.00	Slope	1.00		
						Gravel content	0.38
						Droughty	0.34
KrF:							
Kaymine	65	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Gravel content	1.00
		Slope	1.00	Slope	1.00	Droughty	0.28
						Large stones content	0.01
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76			Depth to bedrock	0.65
				Slope	0.22	Droughty	0.06

Table 9b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
LmE:							
Matewan-------------	30	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.28
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
MHF:							
Matewan-------------	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.28
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
Highsplint----------	30	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
Guyandotte----------	20	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
MnE:							
Matewan-------------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.28
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
Latham--------------	30	Not rated		Not rated		Not rated	
MPF:							
Matewan-------------	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.28
		Slope	1.00	Slope	1.00	Depth to bedrock	0.16
Pineville-----------	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
Guyandotte----------	20	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
PBF:							
Pineville-----------	40	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00		
Berks---------------	35	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.98
		Slope	1.00	Slope	1.00	Depth to bedrock	0.65
PnE:							
Pineville-----------	60	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.53	Slope	1.00
		Large stones content	0.53				

Table 9b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
PnE:							
Lily	25	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.53	Slope	1.00
		Large stones content	0.53			Depth to bedrock	0.35
SbB:							
Sensabaugh	80	Not limited		Not limited		Not limited	
SeB:							
Sensabaugh	45	Not limited		Not limited		Not limited	
Lobdell	35	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Depth to saturated zone	0.22
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
Uf:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	
UtB:							
Urban land	35	Not rated		Not rated		Not rated	
Kanawha	30	Not rated		Not rated		Not rated	
Cotaco	25	Not rated		Not rated		Not rated	
Ye:							
Yeager	75	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Droughty	0.58

Table 10.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AbB:									
Allegheny	Fair	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BrG:									
Berks	Very poor	Poor	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop	---	---	---	---	---	---	---	---	---
BSF:									
Berks	Very poor	Poor	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor
Shelocta	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Ch:									
Chavies	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ck:									
Chavies	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Cr:									
Craigsville	Fair	Good	Good	Fair	Poor	Very poor	Good	Fair	Very poor
FkC:									
Fiveblock	Very poor	Very poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
FkF:									
Fiveblock	Very poor	Very poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
GmE:									
Gilpin	Very poor	Fair	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
Gw:									
Grigsby	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HgE:									
Highsplint	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
HMF:									
Highsplint	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
Cloverlick	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
HuE:									
Highsplint	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Urban land	---	---	---	---	---	---	---	---	---
ImF:									
Itmann	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
KcF:									
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Cedarcreek	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
KfB:									
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Fiveblock	Very poor	Very poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
KfF:									
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Fiveblock	Very poor	Very poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
KrF:									
Kaymine	Very poor	Very poor	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Rock outcrop	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
LmE:									
Lily	Very poor	Very poor	Good	Fair	Very poor	Very poor	Poor	Fair	Very poor
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MHF:									
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
Highsplint	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Guyandotte	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
MnE:									
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
Latham	Very poor	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MPF:									
Matewan	Very poor	Poor	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor
Pineville	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Guyandotte	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
PBF:									
Pineville	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Berks	Very poor	Poor	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor
PnE:									
Pineville	Very poor	Poor	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Lily	Very poor	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
SbB:									
Sensabaugh	Fair	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SeB:									
Sensabaugh	Fair	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Lobdell	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Ua:									
Udorthents	---	---	---	---	---	---	---	---	---
Ub:									
Udorthents	---	---	---	---	---	---	---	---	---
UcB:									
Udorthents	---	---	---	---	---	---	---	---	---

Table 10.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UcB:									
Urban land	---	---	---	---	---	---	---	---	---
Ud:									
Urban land	---	---	---	---	---	---	---	---	---
Chavies	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Uf:									
Urban land	---	---	---	---	---	---	---	---	---
Chavies	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
UkB:									
Urban land	---	---	---	---	---	---	---	---	---
Kanawha	Fair	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
UnB:									
Urban land	---	---	---	---	---	---	---	---	---
Kanawha	Fair	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
UtB:									
Urban land	---	---	---	---	---	---	---	---	---
Kanawha	Fair	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Cotaco	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ye:									
Yeager	Poor	Fair	Good	Fair	Very poor	Very poor	Fair	Fair	Very poor

Table 11a.--Building Site Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny	90	Not limited		Not limited		Somewhat limited	
						Slope	0.12
BrG:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64		
Rock outcrop	40	Not rated		Not rated		Not rated	
BSF:							
Berks	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64		
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Ch:							
Chavies	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Ck:							
Chavies	90	Not limited		Not limited		Not limited	
Cr:							
Craigsville	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
FkC:							
Fiveblock	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Kaymine	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
FkF:							
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Kaymine	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
GmE:							
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.20	Depth to hard bedrock	1.00	Depth to hard bedrock	0.20
				Depth to soft bedrock	0.64		
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15

Table 11a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Gw:							
Grigsby	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.24		
HgE:							
Highsplint	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
HMF:							
Highsplint	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Matewan	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
Cloverlick	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
HuE:							
Highsplint	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.96	Large stones content	0.96	Large stones content	0.96
Urban land	35	Not rated		Not rated		Not rated	
ImF:							
Itmann	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
KcF:							
Kaymine	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Matewan	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.67	Depth to hard bedrock	1.00	Large stones content	0.67
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to hard bedrock	0.15
KfB:							
Kaymine	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.57	Large stones content	0.57	Large stones content	0.57
Fiveblock	25	Not limited		Not limited		Not limited	
KfF:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.57	Large stones content	0.57	Large stones content	0.57

Table 11a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
KfF:							
Fiveblock	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
KrF:							
Kaymine	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.03	Depth to hard bedrock	1.00	Depth to hard bedrock	0.03
				Depth to soft bedrock	0.64		
Matewan	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.67	Depth to hard bedrock	1.00	Large stones content	0.67
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to hard bedrock	0.15
MHF:							
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.67	Depth to hard bedrock	1.00	Large stones content	0.67
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to hard bedrock	0.15
Highsplint	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Guyandotte	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
MnE:							
Matewan	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.67	Depth to hard bedrock	1.00	Large stones content	0.67
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to hard bedrock	0.15
Latham	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Large stones content	1.00	Shrink-swell	1.00	Large stones content	1.00
		Depth to saturated zone	0.07	Large stones content	1.00	Depth to saturated zone	0.07
				Depth to soft bedrock	0.15		

Table 11a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
MPF:							
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.67	Depth to hard bedrock	1.00	Large stones content	0.67
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to hard bedrock	0.15
Pineville	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Guyandotte	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
PBF:							
Pineville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64		
PnE:							
Pineville	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Lily	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Depth to hard bedrock	1.00	Depth to hard bedrock	0.35
SbB:							
Sensabaugh	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.50
SeB:							
Sensabaugh	45	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.15	Slope	0.12
Lobdell	35	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	1.00	Depth to saturated zone	0.44
						Slope	0.12
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	

Table 11a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Ud:							
Urban land----------	45	Not rated		Not rated		Not rated	
Chavies------------	30	Not rated		Not rated		Not rated	
Uf:							
Urban land----------	45	Not rated		Not rated		Not rated	
Chavies------------	30	Not rated		Not rated		Not rated	
UkB:							
Urban land----------	45	Not rated		Not rated		Not rated	
Kanawha------------	35	Not rated		Not rated		Not rated	
UnB:							
Urban land----------	45	Not rated		Not rated		Not rated	
Kanawha------------	35	Not rated		Not rated		Not rated	
UtB:							
Urban land----------	35	Not rated		Not rated		Not rated	
Kanawha------------	30	Not rated		Not rated		Not rated	
Cotaco-------------	25	Not rated		Not rated		Not rated	
Ye:							
Yeager-------------	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.15		

Table 11b.--Building Site Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
BrG:							
Berks---------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64	Droughty	0.98
						Depth to bedrock	0.65
				Cutbanks cave	0.10		
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64	Droughty	0.98
						Depth to bedrock	0.65
				Cutbanks cave	0.10		
Shelocta------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Ch:							
Chavies-------------	90	Somewhat limited		Very limited		Not limited	
		Flooding	0.40	Cutbanks cave	1.00		
Ck:							
Chavies-------------	90	Not limited		Very limited		Not rated	
				Cutbanks cave	1.00		
Cr:							
Craigsville---------	90	Somewhat limited		Very limited		Very limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	1.00
		Flooding	0.40			Droughty	0.05
FkC:							
Fiveblock-----------	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.99
		Slope	0.01	Slope	0.01	Large stones content	0.79
						Droughty	0.09
						Slope	0.01
Kaymine-------------	45	Somewhat limited		Somewhat limited		Very limited	
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
		Slope	0.01	Slope	0.01	Droughty	0.28
						Large stones content	0.01
						Slope	0.01
FkF:							
Fiveblock-----------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.99
						Large stones content	0.79
						Droughty	0.09

Table 11b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
FkF:							
Kaymine	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
						Droughty	0.28
						Large stones content	0.01
GmE:							
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	1.00
		Depth to hard bedrock	0.20	Depth to soft bedrock	0.64	Depth to bedrock	0.65
				Cutbanks cave	0.10		
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Slope	1.00	Droughty	0.48
				Cutbanks cave	0.10	Depth to bedrock	0.16
Gw:							
Grigsby	80	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Depth to saturated zone	0.24		
				Cutbanks cave	0.10		
HgE:							
Highsplint	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
HMF:							
Highsplint	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Matewan	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Slope	1.00	Droughty	0.44
				Cutbanks cave	0.10	Depth to bedrock	0.16
Cloverlick	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
HuE:							
Highsplint	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.96	Large stones content	0.96		
				Cutbanks cave	0.10		
Urban land	35	Not rated		Not rated		Not rated	

Table 11b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
ImF:							
Itmann	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
						Droughty	0.98
KcF:							
Kaymine	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
						Droughty	0.28
						Large stones content	0.01
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
						Droughty	0.99
Matewan	20	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.67	Slope	1.00	Droughty	0.28
		Depth to hard bedrock	0.15	Large stones content	0.67	Depth to bedrock	0.16
				Cutbanks cave	0.10		
KfB:							
Kaymine	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.57	Large stones content	0.57	Large stones content	0.68
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.29
Fiveblock	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.54
						Droughty	0.34
KfF:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.57	Large stones content	0.57	Large stones content	0.68
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.29
Fiveblock	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.68
						Gravel content	0.38
						Droughty	0.34
KrF:							
Kaymine	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	1.00
						Droughty	0.28
						Large stones content	0.01
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 11b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
LmE:							
Lily	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.03			Depth to bedrock	0.65
				Slope	1.00	Droughty	0.06
				Depth to soft bedrock	0.64		
				Cutbanks cave	0.10		
Matewan	30	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.67			Droughty	0.28
				Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Large stones content	0.67		
				Cutbanks cave	0.10		
MHF:							
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.67			Droughty	0.28
				Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Large stones content	0.67		
				Cutbanks cave	0.10		
Highsplint	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Guyandotte	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
MnE:							
Matewan	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.67			Droughty	0.28
				Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Large stones content	0.67		
				Cutbanks cave	0.10		
Latham	30	Very limited		Very limited		Not rated	
		Slope	1.00	Slope	1.00		
		Frost action	1.00	Depth to saturated zone	1.00		
		Shrink-swell	1.00				
		Large stones content	1.00	Large stones content	1.00		
		Depth to saturated zone	0.03	Too clayey	0.50		
				Depth to soft bedrock	0.15		
MPF:							
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Large stones content	0.67			Droughty	0.28
				Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Large stones content	0.67		
				Cutbanks cave	0.10		

Table 11b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MPF:							
Pineville	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Guyandotte	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
PBF:							
Pineville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.64	Droughty	0.98
						Depth to bedrock	0.65
				Cutbanks cave	0.10		
PnE:							
Pineville	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Lily	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.35			Depth to bedrock	0.35
				Slope	1.00		
				Cutbanks cave	0.10		
SbB:							
Sensabaugh	80	Somewhat limited		Very limited		Not limited	
		Flooding	0.40	Cutbanks cave	1.00		
SeB:							
Sensabaugh	45	Somewhat limited		Very limited		Not limited	
		Flooding	0.40	Cutbanks cave	1.00		
				Depth to saturated zone	0.15		
Lobdell	35	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Flooding	1.00			Depth to saturated zone	0.22
		Depth to saturated zone	0.22	Flooding	0.60		
				Cutbanks cave	0.10		
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	

Table 11b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Uf:							
Urban land----------	45	Not rated		Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated		Not rated	
UkB:							
Urban land----------	45	Not rated		Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated		Not rated	
UnB:							
Urban land----------	45	Not rated		Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated		Not rated	
UtB:							
Urban land----------	35	Not rated		Not rated		Not rated	
Kanawha-------------	30	Not rated		Not rated		Not rated	
Cotaco--------------	25	Not rated		Not rated		Not rated	
Ye:							
Yeager--------------	75	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60	Droughty	0.58
				Depth to saturated zone	0.15		

Table 12a.--Sanitary Facilities (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
AbB:					
Allegheny	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
BrG:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rock outcrop	40	Not rated		Not rated	
BSF:					
Berks	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Shelocta	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Ch:					
Chavies	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
Ck:					
Chavies	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
Cr:					
Craigsville	90	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Flooding	0.40
		Flooding	0.40		
FkC:					
Fiveblock	45	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.01		
Kaymine	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slope	0.01	Slope	1.00

Table 12a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
FkF:					
Fiveblock-----------	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
Kaymine-------------	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
GmE:					
Gilpin--------------	40	Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
Matewan-------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gw:					
Grigsby-------------	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Depth to saturated zone	0.65	Depth to saturated zone	0.02
HgE:					
Highsplint----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
HMF:					
Highsplint----------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Matewan-------------	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Cloverlick----------	15	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.50		

Table 12a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
HuE:					
Highsplint	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Large stones content	1.00
		Large stones content	0.96	Seepage	1.00
Urban land	35	Not rated		Not rated	
ImF:					
Itmann	70	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
KcF:					
Kaymine	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Cedarcreek	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Matewan	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.67	Large stones content	1.00
KfB:					
Kaymine	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.57	Large stones content	1.00
				Slope	0.32
Fiveblock	25	Somewhat limited		Somewhat limited	
		Slow water movement	0.32	Seepage	0.68
				Slope	0.32
				Large stones content	0.12
KfF:					
Kaymine	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.57	Large stones content	1.00
Fiveblock	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.32	Seepage	0.68
				Large stones content	0.14

Table 12a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
KrF:					
Kaymine	65	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rock outcrop	15	Not rated		Not rated	
LmE:					
Lily	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
				Seepage	1.00
Matewan	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.67	Large stones content	1.00
MHF:					
Matewan	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.67	Large stones content	1.00
Highsplint	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Guyandotte	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
MnE:					
Matewan	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.67	Large stones content	1.00
Latham	30	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00	Large stones content	1.00
		Slope	1.00	Depth to saturated zone	0.44
		Large stones content	1.00		

Table 12a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MPF:					
Matewan	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.67	Large stones content	1.00
Pineville	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	0.50
		Slow water movement	0.50		
Guyandotte	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
PBF:					
Pineville	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	0.50
		Slow water movement	0.50		
Berks	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
PnE:					
Pineville	60	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	0.50
		Slow water movement	0.50		
Lily	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
SbB:					
Sensabaugh	80	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.92
		Flooding	0.40	Flooding	0.40
SeB:					
Sensabaugh	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.68
		Depth to saturated zone	0.40	Flooding	0.40
		Flooding	0.40		

Table 12a.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SeB:					
Lobdell-------------	35	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.68
		Slow water movement	0.50		
Ua:					
Udorthents----------	100	Not rated		Not rated	
Ub:					
Udorthents----------	95	Not rated		Not rated	
UcB:					
Udorthents----------	50	Not rated		Not rated	
Urban land----------	40	Not rated		Not rated	
Ud:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
Uf:					
Urban land----------	45	Not rated		Not rated	
Chavies-------------	30	Not rated		Not rated	
UkB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UnB:					
Urban land----------	45	Not rated		Not rated	
Kanawha-------------	35	Not rated		Not rated	
UtB:					
Urban land----------	35	Not rated		Not rated	
Kanawha-------------	30	Not rated		Not rated	
Cotaco--------------	25	Not rated		Not rated	
Ye:					
Yeager--------------	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
		Depth to saturated zone	0.40		

Table 12b.--Sanitary Facilities (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Not limited		Not limited		Somewhat limited	
						Gravel content	0.07
BrG:							
Berks---------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
Rock outcrop--------	40	Not rated		Very limited		Not rated	
				Slope	1.00		
BSF:							
Berks---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
Shelocta------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
						Gravel content	0.35
Ch:							
Chavies-------------	90	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
				Flooding	0.40		
		Flooding	0.40				
Ck:							
Chavies-------------	90	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
Cr:							
Craigsville---------	90	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
				Flooding	0.40	Seepage	1.00
		Too sandy	0.50			Too sandy	0.50
		Flooding	0.40				
FkC:							
Fiveblock-----------	45	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
				Slope	0.01	Seepage	1.00
		Slope	0.01			Slope	0.01
Kaymine-------------	45	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
				Slope	0.01	Seepage	0.50
		Slope	0.01			Slope	0.01

Table 12b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
FkF:							
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	1.00
Kaymine	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.50
GmE:							
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
						Gravel content	0.01
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
Gw:							
Grigsby	80	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage, bottom layer	1.00	Seepage	1.00		
HgE:							
Highsplint	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
		Large stones content	0.02			Large stones content	0.02
HMF:							
Highsplint	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
						Gravel content	0.07
Matewan	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
Cloverlick	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Large stones content	0.06
		Large stones content	0.06			Gravel content	0.04

Table 12b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
HuE:							
Highsplint	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones	1.00	Seepage	1.00	Large stones	1.00
		Seepage, bottom layer	1.00			Seepage	0.50
Urban land	35	Not rated		Very limited		Not rated	
				Slope	1.00		
ImF:							
Itmann	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	1.00
KcF:							
Kaymine	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.50
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
Matewan	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Large stones content	0.67			Large stones content	0.67
						Gravel content	0.08
KfB:							
Kaymine	45	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Large stones content	0.61
		Large stones content	0.61			Seepage	0.50
Fiveblock	25	Not limited		Not limited		Somewhat limited	
						Gravel content	0.01
KfF:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Large stones content	0.61
		Large stones content	0.61			Seepage	0.50
Fiveblock	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.25
KrF:							
Kaymine	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Slope	1.00
						Seepage	0.50

Table 12b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KrF:							
Rock outcrop--------	15	Not rated		Very limited		Not rated	
				Depth to bedrock	1.00		
				Slope	1.00		
LmE:							
Lily----------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.21
Matewan-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Large stones content	0.67			Large stones content	0.67
						Gravel content	0.08
MHF:							
Matewan-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Large stones content	0.67			Large stones content	0.67
						Gravel content	0.08
Highsplint----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
						Gravel content	0.34
Guyandotte----------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
MnE:							
Matewan-------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Large stones content	0.67			Large stones content	0.67
						Gravel content	0.08
Latham--------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00	Depth to saturated zone	0.44	Too clayey	1.00
		Large stones	1.00			Large stones	1.00
		Depth to saturated zone	0.95			Depth to saturated zone	0.68

Table 12b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MPF:							
Matewan	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Large stones content	0.67			Large stones content	0.67
						Gravel content	0.08
Pineville	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	0.35
Guyandotte	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
PBF:							
Pineville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	0.44
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	0.21
PnE:							
Pineville	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	0.21
Lily	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
SbB:							
Sensabaugh	80	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.79
				Flooding	0.40	Gravel content	0.37
		Flooding	0.40				
SeB:							
Sensabaugh	45	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.63
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.24
				Flooding	0.40		
		Flooding	0.40				
Lobdell	35	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.88
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage, bottom layer	1.00	Seepage	1.00		

Table 12b.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
Ua:							
Udorthents	100	Not rated		Very limited		Not rated	
				Slope	1.00		
Ub:							
Udorthents	95	Not rated		Very limited		Not rated	
				Slope	1.00		
UcB:							
Udorthents	50	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Urban land	40	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Ud:							
Urban land	45	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Chavies	30	Not rated		Very limited		Not rated	
				Seepage	1.00		
				Flooding	0.40		
Uf:							
Urban land	45	Not rated		Somewhat limited		Not rated	
				Flooding	0.20		
Chavies	30	Not rated		Very limited		Not rated	
				Seepage	1.00		
UkB:							
Urban land	45	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Kanawha	35	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
UnB:							
Urban land	45	Not rated		Somewhat limited		Not rated	
				Flooding	0.20		
Kanawha	35	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
UtB:							
Urban land	35	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Kanawha	30	Not rated		Somewhat limited		Not rated	
				Flooding	0.40		
Cotaco	25	Not rated		Very limited		Not rated	
				Depth to saturated zone	1.00		
				Flooding	0.40		
Ye:							
Yeager	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Too sandy	1.00	Seepage	1.00		
		Seepage, bottom layer	1.00				

Table 13a.--Construction Materials (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
AbB:					
Allegheny-----------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BrG:					
Berks---------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	40	Not rated		Not rated	
BSF:					
Berks---------------	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Shelocta------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ch:					
Chavies-------------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.01
		Thickest layer	0.00	Bottom layer	0.09
Ck:					
Chavies-------------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.01
		Thickest layer	0.00	Bottom layer	0.09
Cr:					
Craigsville---------	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.03
		Thickest layer	0.00	Bottom layer	0.12
FkC:					
Fiveblock-----------	45	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.02
		Bottom layer	0.00	Thickest layer	0.02
Kaymine-------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FkF:					
Fiveblock-----------	45	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.02
		Bottom layer	0.00	Thickest layer	0.02
Kaymine-------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
GmE:					
Gilpin--------------	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Matewan-------------	35	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Gw:					
Grigsby-------------	80	Not rated		Not rated	
HgE:					
Highsplint----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HMF:					
Highsplint----------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Matewan-------------	25	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Cloverlick----------	15	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
HuE:					
Highsplint----------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Urban land----------	35	Not rated		Not rated	
ImF:					
Itmann--------------	70	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.03
		Thickest layer	0.00	Thickest layer	0.03
KcF:					
Kaymine-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cedarcreek----------	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Matewan-------------	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
KfB:					
Kaymine-------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Fiveblock-----------	25	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00

Table 13a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
KfF:					
Kaymine	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Fiveblock	25	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
KrF:					
Kaymine	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
LmE:					
Lily	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Matewan	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MHF:					
Matewan	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Highsplint	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Guyandotte	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MnE:					
Matewan	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Latham	30	Not rated		Not rated	
MPF:					
Matewan	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pineville	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Guyandotte	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PBF:					
Pineville	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
PBF:					
Berks	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PnE:					
Pineville	60	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Organic matter content	0.00	Thickest layer	0.00
		Bottom layer	0.00	Organic matter content	0.00
Lily	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
		Organic matter content	0.00	Organic matter content	0.00
SbB:					
Sensabaugh	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SeB:					
Sensabaugh	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Lobdell	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ua:					
Udorthents	100	Not rated		Not rated	
Ub:					
Udorthents	95	Not rated		Not rated	
UcB:					
Udorthents	50	Not rated		Not rated	
Urban land	40	Not rated		Not rated	
Ud:					
Urban land	45	Not rated		Not rated	
Chavies	30	Not rated		Not rated	
Uf:					
Urban land	45	Not rated		Not rated	
Chavies	30	Not rated		Not rated	
UkB:					
Urban land	45	Not rated		Not rated	
Kanawha	35	Not rated		Not rated	

Table 13a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UnB:					
Urban land	45	Not rated		Not rated	
Kanawha	35	Not rated		Not rated	
UtB:					
Urban land	35	Not rated		Not rated	
Kanawha	30	Not rated		Not rated	
Cotaco	25	Not rated		Not rated	
Ye:					
Yeager	75	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.50

Table 13b.--Construction Materials (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
AbB:							
Allegheny-----------	90	Fair		Good		Poor	
		Too acid	0.12			Rock fragments	0.00
		Organic matter content low	0.12			Too acid	0.59
						Hard to reclaim (rock fragments)	0.68
BrG:							
Berks---------------	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.18	Slope	0.00	Rock fragments	0.00
						Depth to bedrock	0.35
		Depth to bedrock	0.35			Too acid	0.59
		Too acid	0.50				
Rock outcrop--------	40	Not rated		Not rated		Not rated	
BSF:							
Berks---------------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.18	Slope	0.00	Rock fragments	0.00
						Depth to bedrock	0.35
		Depth to bedrock	0.35			Too acid	0.59
		Too acid	0.50				
Shelocta------------	35	Fair		Poor		Poor	
		Too acid	0.08	Slope	0.00	Slope	0.00
		Organic matter content low	0.68			Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.05
		Too clayey	0.82				
						Too acid	0.50
						Too clayey	0.56
Ch:							
Chavies-------------	90	Fair		Good		Fair	
		Organic matter content low	0.60			Rock fragments	0.98
		Too acid	0.88				
Ck:							
Chavies-------------	90	Fair		Good		Fair	
		Organic matter content low	0.60			Rock fragments	0.98
		Too acid	0.88				
Cr:							
Craigsville---------	90	Fair		Good		Poor	
		Too acid	0.50			Hard to reclaim (rock fragments)	0.00
		Droughty	0.95				
						Rock fragments	0.00
						Too acid	0.88

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
FkC:							
Fiveblock-----------	45	Fair		Fair		Poor	
		Organic matter content low	0.01	Stone content	0.99	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
		Stone content	0.98				
		Droughty	0.99				
Kaymine-------------	45	Fair		Fair		Poor	
		Organic matter content low	0.01	Stone content	0.96	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
		Droughty	0.91				
		Stone content	0.95				
FkF:							
Fiveblock-----------	45	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
				Stone content	0.99	Rock fragments	0.00
		Stone content	0.98			Hard to reclaim (rock fragments)	0.00
		Droughty	0.99				
Kaymine-------------	45	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
				Stone content	0.96	Rock fragments	0.00
		Droughty	0.91			Hard to reclaim (rock fragments)	0.00
		Stone content	0.95				
GmE:							
Gilpin--------------	40	Fair		Poor		Poor	
		Organic matter content low	0.32	Slope	0.00	Slope	0.00
				Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.35			Too clayey	0.31
		Too acid	0.50			Depth to bedrock	0.35
		Too clayey	0.50			Too acid	0.68
Matewan-------------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.84	Cobble content	0.63	Too acid	0.76
						Depth to bedrock	0.84
Gw:							
Grigsby-------------	80	Fair		Good		Good	
		Too acid	0.97				
HgE:							
Highsplint----------	80	Fair		Poor		Poor	
		Too acid	0.20	Slope	0.00	Slope	0.00
		Organic matter content low	0.50	Cobble content	0.92	Rock fragments	0.01
						Hard to reclaim (rock fragments)	0.12
		Cobble content	0.99				
						Too acid	0.76
HMF:							
Highsplint----------	35	Fair		Poor		Poor	
		Too acid	0.20	Slope	0.00	Slope	0.00
		Organic matter content low	0.50	Cobble content	0.78	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
						Too acid	0.76

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
HMF:							
Matewan-------------	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.84	Cobble content	0.63	Too acid	0.76
						Depth to bedrock	0.84
Cloverlick----------	15	Fair		Poor		Poor	
		Organic matter content low	0.08	Slope	0.00	Slope	0.00
		Too acid	0.20	Cobble content	0.67	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.94			Rock fragments	0.00
						Too acid	0.76
HuE:							
Highsplint----------	45	Fair		Poor		Poor	
		Cobble content	0.17	Cobble content	0.00	Slope	0.00
		Too acid	0.20	Slope	0.00	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.50	Stone content	0.89	Rock fragments	0.00
		Stone content	0.86			Too acid	0.76
Urban land----------	35	Not rated		Not rated		Not rated	
ImF:							
Itmann--------------	70	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
		Droughty	0.06			Rock fragments	0.00
		Too acid	0.50			Hard to reclaim (rock fragments)	0.00
						Too acid	0.59
KcF:							
Kaymine-------------	35	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
		Droughty	0.91	Stone content	0.96	Rock fragments	0.00
		Stone content	0.95			Hard to reclaim (rock fragments)	0.00
Cedarcreek----------	25	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
		Droughty	0.03			Hard to reclaim (rock fragments)	0.00
		Too acid	0.50			Rock fragments	0.00
						Too acid	0.59
Matewan-------------	20	Fair		Poor		Poor	
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Cobble content	0.33	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.00	Depth to bedrock	0.84
		Depth to bedrock	0.84			Too acid	0.98
KfB:							
Kaymine-------------	45	Fair		Poor		Poor	
		Organic matter content low	0.01	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.39			Rock fragments	0.00
		Droughty	0.91				

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
KfB:							
Fiveblock	25	Fair		Fair		Poor	
		Organic matter content low	0.01	Cobble content	0.57	Hard to reclaim (rock fragments)	0.00
		Droughty	0.89			Rock fragments	0.00
KfF:							
Kaymine	50	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
		Cobble content	0.39	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Droughty	0.91			Rock fragments	0.00
Fiveblock	25	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
		Droughty	0.89	Cobble content	0.55	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
KrF:							
Kaymine	65	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Rock fragments	0.00
		Droughty	0.91	Stone content	0.96	Hard to reclaim (rock fragments)	0.00
		Stone content	0.95			Slope	0.00
Rock outcrop	15	Not rated		Not rated		Not rated	
LmE:							
Lily	50	Fair		Poor		Poor	
		Droughty	0.11	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.35	Slope	0.00	Rock fragments	0.24
		Too acid	0.50			Depth to bedrock	0.35
		Organic matter content low	0.66			Too acid	0.88
Matewan	30	Fair		Poor		Poor	
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Cobble content	0.33	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.00	Depth to bedrock	0.84
		Depth to bedrock	0.84			Too acid	0.98
MHF:							
Matewan	35	Fair		Poor		Poor	
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Cobble content	0.33	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.00	Depth to bedrock	0.84
		Depth to bedrock	0.84			Too acid	0.98
Highsplint	30	Fair		Poor		Poor	
		Too acid	0.20	Slope	0.00	Slope	0.00
		Organic matter content low	0.50	Cobble content	0.94	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.08
						Too acid	0.76
Guyandotte	20	Fair		Poor		Poor	
		Too acid	0.54	Slope	0.00	Slope	0.00
		Organic matter content low	0.92			Rock fragments	0.00
		Droughty	0.99			Hard to reclaim (rock fragments)	0.00
						Too acid	0.98

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MnE:							
Matewan	45	Fair		Poor		Poor	
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Cobble content	0.33	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.00	Depth to bedrock	0.84
		Depth to bedrock	0.84			Too acid	0.98
Latham	30	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Too clayey	0.00
		Droughty	0.61	Shrink-swell	0.49	Rock fragments	0.00
		Depth to bedrock	0.84	Wetness depth	0.76	Too acid	0.32
		Water erosion	0.90			Wetness depth	0.76
MPF:							
Matewan	35	Fair		Poor		Poor	
		Droughty	0.02	Depth to bedrock	0.00	Slope	0.00
		Cobble content	0.33	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.00	Depth to bedrock	0.84
		Depth to bedrock	0.84			Too acid	0.98
Pineville	25	Fair		Poor		Poor	
		Too acid	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.98			Rock fragments	0.00
						Too acid	0.59
						Hard to reclaim (rock fragments)	0.74
Guyandotte	20	Fair		Poor		Poor	
		Too acid	0.54	Slope	0.00	Slope	0.00
		Organic matter content low	0.92			Rock fragments	0.00
		Droughty	0.99			Hard to reclaim (rock fragments)	0.00
						Too acid	0.98
PBF:							
Pineville	40	Fair		Poor		Poor	
		Too acid	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.98			Rock fragments	0.00
						Too acid	0.59
						Hard to reclaim (rock fragments)	0.74
Berks	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.18	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35			Depth to bedrock	0.35
		Too acid	0.50			Too acid	0.59
PnE:							
Pineville	60	Fair		Poor		Poor	
		Too acid	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.88			Rock fragments	0.00
						Too acid	0.59
						Hard to reclaim (rock fragments)	0.68

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
PnE:							
Lily	25	Fair		Poor		Poor	
		Too acid	0.50	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.65	Slope	0.00	Too acid	0.59
		Organic matter content low	0.66			Depth to bedrock	0.65
		Droughty	0.69				
SbB:							
Sensabaugh	80	Fair		Good		Poor	
		Organic matter content low	0.05			Hard to reclaim (rock fragments)	0.00
		Too acid	0.99			Rock fragments	0.88
SeB:							
Sensabaugh	45	Fair		Good		Poor	
		Organic matter content low	0.32			Hard to reclaim (rock fragments)	0.00
		Too acid	0.99			Rock fragments	0.00
Lobdell	35	Fair		Fair		Fair	
		Organic matter content low	0.18	Wetness depth	0.50	Wetness depth	0.50
		Too acid	0.97				
		Water erosion	0.99				
Ua:							
Udorthents	100	Not rated		Not rated		Not rated	
Ub:							
Udorthents	95	Not rated		Not rated		Not rated	
UcB:							
Udorthents	50	Not rated		Not rated		Not rated	
Urban land	40	Not rated		Not rated		Not rated	
Ud:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
Uf:							
Urban land	45	Not rated		Not rated		Not rated	
Chavies	30	Not rated		Not rated		Not rated	
UkB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	
UnB:							
Urban land	45	Not rated		Not rated		Not rated	
Kanawha	35	Not rated		Not rated		Not rated	

Table 13b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
UtB:							
Urban land----------	35	Not rated		Not rated		Not rated	
Kanawha-------------	30	Not rated		Not rated		Not rated	
Cotaco--------------	25	Not rated		Not rated		Not rated	
Ye:							
Yeager--------------	75	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Too acid	0.54			Too acid	0.98
		Droughty	0.79				

Table 14.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AbB:							
Allegheny	90	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Depth to water	1.00
		Slope	0.32				
BrG:							
Berks	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.17				
Rock outcrop	40	Very limited		Not rated		Not rated	
		Slope	1.00				
BSF:							
Berks	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.17				
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Seepage	0.70				
Ch:							
Chavies	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.09	Depth to water	1.00
Ck:							
Chavies	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.09	Depth to water	1.00
Cr:							
Craigsville	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	Depth to water	1.00
FkC:							
Fiveblock	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
		Slope	1.00				
Kaymine	45	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
		Slope	1.00				
FkF:							
Fiveblock	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
		Slope	1.00				
Kaymine	45	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00

Table 14.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
GmE:							
Gilpin--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Depth to bedrock	0.77	Thin layer	0.91		
		Seepage	0.70				
Matewan-------------	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.74				
Gw:							
Grigsby-------------	80	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Seepage	0.04	Depth to saturated zone	0.99
						Cutbanks cave	0.10
HgE:							
Highsplint----------	80	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
HMF:							
Highsplint----------	35	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Matewan-------------	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.74				
Cloverlick----------	15	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
		Slope	1.00				
HuE:							
Highsplint----------	45	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.96	Depth to water	1.00
		Seepage	1.00				
Urban land----------	35	Very limited		Not rated		Not rated	
		Slope	1.00				
ImF:							
Itmann--------------	70	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.03	Depth to water	1.00
		Slope	1.00				
KcF:							
Kaymine-------------	35	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Cedarcreek----------	25	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				

Table 14.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
KcF:							
Matewan-------------	20	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Large stones content	0.67		
		Depth to bedrock	0.74	Seepage	0.03		
KfB:							
Kaymine-------------	45	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
		Slope	0.08	Large stones content	0.57		
Fiveblock-----------	25	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.81	Seepage	0.01	Depth to water	1.00
		Slope	0.08				
KfF:							
Kaymine-------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Seepage	1.00	Large stones content	0.57		
Fiveblock-----------	25	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Seepage	0.01	Depth to water	1.00
		Seepage	0.81				
KrF:							
Kaymine-------------	65	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Rock outcrop--------	15	Very limited		Not rated		Not rated	
		Slope	1.00				
		Depth to bedrock	1.00				
LmE:							
Lily----------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Seepage	1.00				
		Depth to bedrock	0.61				
Matewan-------------	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Large stones content	0.67		
		Depth to bedrock	0.74	Seepage	0.03		
MHF:							
Matewan-------------	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Large stones content	0.67		
		Depth to bedrock	0.74	Seepage	0.03		
Highsplint----------	30	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Guyandotte----------	20	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				

Table 14.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
MnE:							
Matewan	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Large stones content	0.67		
		Depth to bedrock	0.74	Seepage	0.03		
Latham	30	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Depth to water	1.00
		Depth to bedrock	0.05	Depth to saturated zone	0.95		
				Thin layer	0.74		
MPF:							
Matewan	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Large stones content	0.67		
		Depth to bedrock	0.74	Seepage	0.03		
Pineville	25	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Guyandotte	20	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
PBF:							
Pineville	40	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Berks	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.17				
PnE:							
Pineville	60	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	1.00				
Lily	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
		Slope	1.00	Thin layer	0.83		
		Depth to bedrock	0.83				
SbB:							
Sensabaugh	80	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
		Slope	0.68				
SeB:							
Sensabaugh	45	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
		Slope	0.32				
Lobdell	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	0.99	Cutbanks cave	0.10
		Slope	0.32	Piping	0.82		

Table 14.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ua:							
Udorthents----------	100	Very limited		Not rated		Not rated	
		Slope	1.00				
Ub:							
Udorthents----------	95	Very limited		Not rated		Not rated	
		Slope	1.00				
UcB:							
Udorthents----------	50	Somewhat limited		Not rated		Not rated	
		Slope	0.08				
Urban land----------	40	Somewhat limited		Not rated		Not rated	
		Slope	0.08				
Ud:							
Urban land----------	45	Not limited		Not rated		Not rated	
Chavies-------------	30	Very limited		Not rated		Not rated	
		Seepage	1.00				
Uf:							
Urban land----------	45	Not limited		Not rated		Not rated	
Chavies-------------	30	Very limited		Not rated		Not rated	
		Seepage	1.00				
UkB:							
Urban land----------	45	Somewhat limited		Not rated		Not rated	
		Slope	0.08				
Kanawha-------------	35	Very limited		Not rated		Not rated	
		Seepage	1.00				
		Slope	0.08				
UnB:							
Urban land----------	45	Somewhat limited		Not rated		Not rated	
		Slope	0.08				
Kanawha-------------	35	Very limited		Not rated		Not rated	
		Seepage	1.00				
		Slope	0.08				
UtB:							
Urban land----------	35	Somewhat limited		Not rated		Not rated	
		Slope	0.08				
Kanawha-------------	30	Very limited		Not rated		Not rated	
		Seepage	1.00				
		Slope	0.08				
Cotaco--------------	25	Somewhat limited		Not rated		Not rated	
		Seepage	0.70				
		Slope	0.08				
Ye:							
Yeager--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.50	Depth to water	1.00

Table 15.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
AbB:												
Allegheny-------	0-10	Loam	ML, CL	A-4	0	0	88-100	80-100	65-95	50-85	15-29	3-11
	10-60	Gravelly loam, clay loam, sandy clay loam, gravelly fine sandy loam	ML, CL	A-4, A-6	0	0-4	74-100	41-100	34-100	26-81	15-39	3-15
	60-80	Gravelly fine sandy loam, gravelly sandy clay loam, gravelly sandy loam, gravelly loam, gravelly clay loam	SC-SM	A-4, A-6	0	0-5	65-100	35-100	25-93	14-60	20-39	2-15
BrG:												
Berks-----------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Channery silt loam, channery loam	CL-ML	A-4	0	0-9	52-83	5-75	4-74	3-61	18-36	NP-10
	5-22	Extremely parachannery silty clay loam, extremely parachannery loam, extremely channery silt loam	CL-ML	A-4	0	0-8	52-78	3-56	3-56	2-50	18-36	NP-10
	22-28	Extremely channery silt loam, extremely parachannery loam	GP-GM	A-2	0	0-8	52-78	3-56	3-56	2-48	18-36	NP-10
	28-38	Weathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	---	---	---	---	---	---	---	---	---	---	---	---
BSF:												
Berks-----------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Channery silt loam, channery loam	CL-ML	A-4	0	0-9	62-91	23-82	18-81	14-67	18-36	NP-10
	5-22	Extremely parachannery loam, extremely parachannery silty clay loam, extremely channery silt loam	CL-ML	A-1-a, A-2	0	0-8	52-78	3-56	3-56	2-50	18-36	NP-10
	22-28	Extremely parachannery loam, extremely channery silt loam	GP-GM	A-2	0	0-8	51-59	3-19	2-19	2-16	18-36	NP-10
	28-38	Weathered bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
BSF:												
Shelocta--------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Loam, silt loam	ML	A-4	0	0	59-96	19-93	16-93	13-81	20-38	NP-10
	4-58	Channery silty clay loam, channery silt loam	ML	A-4, A-7	0	0	53-92	6-85	4-85	3-81	20-41	NP-12
	58-80	Very channery loam	CL, SC	A-6	0	0	53-92	6-85	4-85	2-70	0-48	NP-28
Ch:												
Chavies---------	0-8	Fine sandy loam, loamy sand, loam	SC-SM, CL-ML	A-4	0	0	78-100	57-100	51-100	22-51	15-35	NP-10
	8-44	Loam, fine sandy loam	SC-SM, CL-ML	A-4	0	0	78-100	57-100	51-100	22-51	15-35	NP-10
	44-65	Loam, fine sandy loam, sandy loam, loamy sand	SC-SM	A-2	0	0	64-100	29-100	21-88	6-36	15-35	NP
Ck:												
Chavies---------	0-8	Fine sandy loam, loamy sand, loam	SC-SM, CL-ML	A-4	---	---	76-100	76-100	58-78	36-50	15-35	NP-10
	8-44	Fine sandy loam, loam	SC-SM, CL-ML	A-4	0	0	78-100	57-100	51-100	22-51	15-35	NP-10
	44-65	Loam, loamy sand, sandy loam, fine sandy loam	SC-SM	A-2	0	0	64-100	29-100	21-88	6-36	15-35	NP
Cr:												
Craigsville-----	0-7	Very gravelly loam, very gravelly sandy loam	SC	A-2	0	0-8	52-92	5-84	3-73	1-42	0-41	NP-13
	7-30	Extremely gravelly loam, extremely gravelly loamy sand, extremely gravelly sandy loam	SC	A-2	0	0-7	52-65	4-30	3-26	1-15	0-35	NP-13
	30-65	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand	SC-SM	A-2	0	0-7	52-61	4-21	2-14	1-7	0-30	NP-10
FkC:												
Fiveblock-------	0-10	Extremely channery sandy loam, extremely channery loamy sand	SC-SM	A-1, A-2	0	9-99	52-78	4-56	3-46	1-26	0-32	NP-13
	10-65	Very channery sandy loam, extremely channery sandy loam, extremely channery loamy sand	SC-SM	A-1, A-2	0-27	0-14	46-74	3-54	3-45	1-25	0-31	NP-13

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
FkC:												
Kaymine---------	0-4	Very channery silt loam, very channery loam	CL-ML, ML	A-4, A-2	0-7	0-14	52-86	4-71	3-68	2-51	19-38	3-19
	4-65	Extremely channery silt loam, extremely channery loam, very channery sandy loam	CL-ML, ML	A-2, A-4	0-27	0-14	51-86	3-71	2-68	1-51	18-37	3-19
FkF:												
Fiveblock-------	0-10	Extremely channery loamy sand, very channery sandy loam, extremely channery sandy loam	SC-SM	A-1, A-2	0	9-99	52-78	4-56	3-46	1-26	0-32	NP-13
	10-65	Very channery sandy loam, extremely channery sandy loam, extremely channery loamy sand	SC-SM	A-1, A-2	0-27	0-14	46-74	3-54	3-45	1-25	0-31	NP-13
Kaymine---------	0-4	Very channery loam, very channery silt loam	CL-ML, ML	A-4, A-2	0-14	0-14	52-86	4-71	3-68	2-51	19-38	3-19
	4-65	Extremely channery loam, extremely channery silt loam	CL-ML, ML	A-2, A-4	0-39	0-21	51-86	3-71	2-68	1-51	18-37	3-19
GmE:												
Gilpin----------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	50-80	20-40	5-15
	9-28	Channery silty clay loam, channery clay loam, channery silt loam, channery loam	CL, SC	A-4, A-6	0	5-20	50-95	45-90	35-75	30-65	20-40	5-15
	28-32	Weathered bedrock			---	---	---	---	---	---	---	---
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
GmE:												
Matewan---------	0-3	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-6	Sandy loam, loam, fine sandy loam	SM, SC	A-2-4	0	0-5	80-90	75-85	70-80	20-50	10-30	NP-10
	6-26	Channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-1-b, A-2-4	0	15-30	50-90	40-80	40-75	10-30	15-30	NP-10
	26-34	Extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-1-b, A-2-4, A-1	0	30-60	45-90	40-80	20-65	0-20	15-30	NP-10
	>34	Bedrock			---	---	---	---	---	---	---	---
Gw:												
Grigsby---------	0-12	Loam, sandy loam	SC-SM	A-2, A-4	0	0	78-100	57-100	48-100	26-67	18-36	NP-10
	12-42	Loam, fine sandy loam, sandy loam	SC-SM	A-2, A-4	---	---	76-100	76-100	50-65	28-36	18-36	NP-10
	42-65	Loamy fine sand, fine sandy loam, loam, sandy loam	SC-SM	A-2, A-4	---	---	27-100	27-100	17-65	9-36	18-36	NP-10
HgE:												
Highsplint------	0-0.5	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-3	Channery loam, loam, silt loam	CL, CL-ML	A-4	0	4-35	66-90	31-85	24-82	18-66	15-35	5-15
	3-53	Very channery loam, very channery silt loam	CL-ML, CL, GC, SC	A-4	0	5-25	54-89	54-89	41-86	31-69	15-35	5-15
	53-65	Extremely channery fine sandy loam, very channery loam	SC-SM, GC-GM	A-2-4, A-4	4-16	45-70	18-64	18-64	15-60	8-37	15-30	NP-10
HMF:												
Highsplint------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-11	Loam, silt loam	CL, CL-ML	A-4	0	0	45-95	45-90	40-70	25-65	15-35	5-15
	11-50	Very channery loam, very channery silt loam	CL-ML, CL, GC, SC	A-2-4, A-4	0	5-40	45-75	40-70	35-65	20-60	15-35	NP-12
	50-65	Extremely channery fine sandy loam, very channery loam	SC-SM, GC-GM	A-1-b, A-2-4, A-4	0	5-45	45-75	40-70	35-55	15-40	15-30	NP-10

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HMF:												
Matewan---------	0-3	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-6	Sandy loam, loam, fine sandy loam	SM, SC	A-2-4	0	0-5	80-90	75-85	70-80	20-50	10-30	NP-10
	6-26	Channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-1-b, A-2-4	0	15-30	50-90	40-80	40-75	10-30	15-30	NP-10
	26-34	Extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-1-b, A-2-4, A-1	0	30-60	45-90	40-80	20-65	0-20	15-30	NP-10
	>34	Bedrock			---	---	---	---	---	---	---	---
Cloverlick------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-9	Loam, silt loam	CL, CL-ML	A-4	0	0	45-95	45-90	40-70	25-65	15-35	5-15
	9-50	Very channery loam, very channery silt loam	CL-ML, CL, GC, SC	A-2-4, A-4	0	5-40	45-75	40-70	35-65	20-60	15-35	NP-12
	50-65	Extremely channery loam, extremely channery fine sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2-4	0	30-60	40-75	40-70	30-55	5-20	15-30	NP-10
HuE:												
Highsplint------	0-0.5	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-3	Channery loam, silt loam	CL, CL-ML	A-4	0	4-35	66-90	31-85	24-82	18-66	15-35	5-15
	3-53	Very channery loam, very channery silt loam, channery loam	CL-ML, CL, GC, SC	A-4	4-22	21-59	54-89	54-89	41-86	31-69	15-35	5-15
	53-65	Extremely channery loam, very channery loam, extremely channery fine sandy loam	SC-SM, GC-GM	A-2-4, A-4	4-16	45-70	18-64	18-64	15-59	10-43	15-30	NP-10
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
ImF:												
Itmann----------	0-5	Extremely channery sandy loam	SP-SM	A-2	0	0-9	52-77	3-54	2-47	1-27	0-32	NP-13
	5-65	Extremely channery sandy loam	SP-SM	A-2	0	0-18	52-77	3-54	2-47	1-27	0-31	NP-13

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
KcF:												
Kaymine---------	0-4	Very channery loam, very channery silt loam	CL-ML, ML	A-4, A-2	0-14	0-14	52-86	4-71	3-68	2-51	19-38	3-19
	4-65	Extremely channery loam, extremely channery silt loam	CL-ML, ML	A-2, A-4	0-39	0-21	51-86	3-71	2-68	1-51	18-37	3-19
Cedarcreek------	0-2	Very channery sandy loam, very channery loam, very channery silt loam	SC-SM	A-2	0-5	0-8	12-63	12-63	11-55	9-50	19-38	3-19
	2-65	Extremely channery loam, very channery loam, very channery sandy loam, very channery silt loam	SC-SM	A-2	0	0-14	52-68	4-50	3-47	2-36	18-37	3-19
Matewan---------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Very channery sandy loam, very channery loam, very channery fine sandy loam	SM, SC	A-2-4	0	4-14	83-96	83-96	58-79	35-53	10-30	NP-10
	4-30	Extremely channery loam, very channery sandy loam, channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-2-4	0	19-67	34-83	11-78	8-72	6-53	10-30	NP-10
	30-33	Extremely flaggy loam, extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-2-4, A-1	0	41-53	43-64	43-64	30-53	18-35	15-30	NP-10
	>33	Bedrock			---	---	---	---	---	---	---	---
KfB:												
Kaymine---------	0-3	Channery loam, channery silt loam	GC	A-2-4, A-4, A-6	0	15-30	70-90	60-85	60-80	25-45	25-35	7-12
	3-65	Very channery silt loam, very channery loam, extremely channery loam	GC	A-4, A-6	0	20-60	70-90	60-85	60-80	40-60	25-35	7-12

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
KfB:												
Fiveblock-------	0-4	Channery loam, channery sandy loam	SM, SC-SM, GC-GM, GM	A-1-b, A-1, A-2	0	7-27	59-85	59-85	45-82	32-62	15-25	NP-7
	4-65	Very channery sandy loam, very channery loamy sand	SM, SC-SM, GC-GM, GM	A-1-b, A-1, A-2	0	13-34	47-84	47-84	32-68	18-42	15-25	NP-7
KfF:												
Kaymine---------	0-3	Channery loam, channery silt loam	GC	A-2-4, A-4, A-6	0	15-30	70-90	60-85	60-80	25-45	25-35	7-12
	3-65	Very channery silt loam, very channery loam, extremely channery loam	GC	A-4, A-6	0	20-60	70-90	60-85	60-80	40-60	25-35	7-12
Fiveblock-------	0-4	Channery loam, channery sandy loam	SM, SC-SM, GC-GM, GM	A-1-b, A-1, A-2	0	15-30	55-70	50-65	35-50	10-25	15-25	NP-7
	4-65	Very channery sandy loam, very channery loamy sand	SM, SC-SM, GC-GM, GM	A-1-b, A-1, A-2	0	15-30	55-70	50-65	35-50	10-25	15-25	NP-7
KrF:												
Kaymine---------	0-4	Very channery loam, very channery silt loam	CL-ML, ML	A-4, A-2	0-14	0-14	52-86	4-71	3-68	2-51	19-38	3-19
	4-65	Very channery loam, extremely channery loam, extremely channery silt loam	CL-ML, ML	A-2, A-4	0-39	0-21	51-86	3-71	2-68	1-51	18-37	3-19
Rock outcrop----	---	---	---	---	---	---	---	---	---	---	---	---
LmE:												
Lily------------	0-0.5	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0-5-4	Sandy loam, loam, fine sandy loam	SC-SM	A-2, A-4	0	0	64-100	27-100	19-88	8-51	18-36	NP-10
	4-26	Channery sandy clay loam, channery sandy loam, channery loam, sandy loam	SC, SC-SM	A-6, A-4	0	0	64-100	28-100	17-97	7-60	18-36	NP-11
	26-28	Channery sandy clay loam, channery loam, channery sandy loam, channery fine sandy loam	SC, SC-SM	A-6, A-4	0	0	60-100	20-100	12-97	5-60	18-36	NP-11
	28-37	Weathered bedrock	GM, SM		---	---	---	---	---	---	---	---
	>37	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LmE:												
Matewan---------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Very channery sandy loam, very channery loam, very channery fine sandy loam	SM, SC	A-2-4	0	4-14	83-96	83-96	58-79	35-53	10-30	NP-10
	4-30	Extremely channery loam, very channery sandy loam, channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-2-4	0	19-67	34-83	11-78	8-72	6-53	10-30	NP-10
	30-33	Extremely flaggy loam, extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-2-4, A-1	0	41-53	43-64	43-64	30-53	18-35	15-30	NP-10
	>33	Bedrock			---	---	---	---	---	---	---	---
MHF:												
Matewan---------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Very channery sandy loam, very channery loam, very channery fine sandy loam	SM, SC	A-2-4	0	4-14	83-96	83-96	58-79	35-53	10-30	NP-10
	4-30	Extremely channery loam, very channery sandy loam, channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-2-4	0	19-67	34-83	11-78	8-72	6-53	10-30	NP-10
	30-33	Extremely flaggy loam, extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-2-4, A-1	0	41-53	43-64	43-64	30-53	18-35	15-30	NP-10
	>33	Bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MHF:												
Highsplint------	0-0.5	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-3	Channery loam, loam, silt loam	CL, CL-ML	A-4	0	0	45-95	45-90	40-70	25-65	15-35	5-15
	3-53	Very channery loam, very channery silt loam, channery loam, extremely channery loam	CL-ML, CL, GC, SC	A-4	0	5-25	45-75	40-70	35-65	20-60	15-35	5-15
	53-65	Extremely channery loam, very channery loam, extremely channery fine sandy loam	SC-SM, GC-GM	A-2-4, A-4	0	5-45	45-75	40-70	35-55	15-40	15-30	NP-10
Guyandotte------	0-1	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-14	Channery sandy loam, channery loam	SP-SM	A-2	0	0-9	52-77	3-54	3-52	2-40	22-58	3-18
	14-65	Very channery loam, extremely channery sandy loam, very channery sandy loam	GC-GM	A-1, A-2	0	0-7	52-80	4-60	3-57	2-42	18-40	3-19
MnE:												
Matewan---------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Very channery sandy loam, very channery loam, very channery fine sandy loam	SM, SC	A-2-4	0	4-14	83-96	83-96	58-79	35-53	10-30	NP-10
	4-30	Extremely channery loam, very channery sandy loam, channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-2-4	0	19-67	34-83	11-78	8-72	6-53	10-30	NP-10
	30-33	Extremely flaggy loam, extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-2-4, A-1	0	41-53	43-64	43-64	30-53	18-35	15-30	NP-10
	>33	Bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MnE:												
Latham----------	0-4	Silt loam	CL-ML	A-4, A-6	---	---	76-100	76-100	72-95	70-80	0-61	NP-18
	4-29	Channery silty clay, channery silty clay loam	CL, CH	A-7	---	0-5	57-100	57-100	56-97	53-93	40-54	19-29
	29-34	Channery silty clay	CH, CL	A-7	0-2	0-5	57-100	57-100	56-97	53-93	46-64	28-43
	34-38	Weathered bedrock			---	---	---	---	---	---	---	---
MPF:												
Matewan---------	0-0.5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	0.5-4	Very channery sandy loam, very channery loam, very channery fine sandy loam	SM, SC	A-2-4	0	4-14	83-96	83-96	58-79	35-53	10-30	NP-10
	4-30	Extremely channery loam, very channery sandy loam, channery sandy loam, channery fine sandy loam, channery loam	SM, SC	A-2-4	0	19-67	34-83	11-78	8-72	6-53	10-30	NP-10
	30-33	Extremely flaggy loam, extremely channery sandy loam, extremely channery loamy sand, extremely channery loam, very channery sandy loam	SC-SM, GC-GM	A-2-4, A-1	0	41-53	43-64	43-64	30-53	18-35	15-30	NP-10
	>33	Bedrock			---	---	---	---	---	---	---	---
Pineville-------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-4	Very channery fine sandy loam, very channery loam, very channery sandy loam	SC-SM	A-6, A-2	0	6-25	62-88	5-71	4-68	2-51	19-47	3-18
	4-59	Channery loam, very channery loam, channery sandy loam, channery clay loam	CL, CL-ML	A-4, A-6	0	0	53-86	5-72	4-69	3-53	18-36	3-19
	59-65	Very channery clay loam, very channery fine sandy loam, very channery loam, very channery sandy loam	ML, CL-ML	A-4, A-6	0	5-23	63-90	6-75	5-73	3-56	18-36	3-19

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MPF:												
Guyandotte------	0-1	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-14	Channery loam, channery sandy loam	SP-SM	A-2	0	0-9	52-77	3-54	3-52	2-40	22-58	3-18
	14-65	Very channery loam, extremely channery sandy loam, very channery sandy loam	GC-GM	A-1, A-2	0	0-7	52-80	4-60	3-57	2-42	18-40	3-19
PBF:												
Pineville-------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-4	Very channery loam, very channery fine sandy loam, very channery sandy loam	SC-SM	A-6, A-2	0	0	52-83	4-67	3-64	2-48	19-47	3-18
	4-59	Very channery loam, channery sandy loam, channery clay loam, channery loam	CL, CL-ML	A-4, A-6	0	0	53-86	5-72	4-69	3-53	18-36	3-19
	59-65	Very channery fine sandy loam, very channery loam, very channery clay loam, very channery sandy loam	ML, CL-ML	A-4, A-6	0	0	53-86	5-72	4-69	3-53	18-36	3-19
Berks-----------	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Channery silt loam, channery loam	CL-ML	A-4	0	0	52-84	5-68	4-67	3-55	18-36	NP-10
	5-22	Extremely parachannery silty clay loam, extremely parachannery loam, extremely channery silt loam	CL-ML	A-2	0	0	52-78	3-56	3-56	2-50	18-36	NP-10
	22-28	Extremely parachannery loam, extremely channery silt loam	GP-GM	A-2	0	0	51-59	3-19	2-19	2-16	18-36	NP-10
	28-38	Weathered bedrock			---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
PnE:												
Pineville-------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-4	Very channery loam	CL-ML, ML, SC-SM, SM	A-2, A-4	1-10	15-30	55-90	50-85	45-80	30-75	25-35	4-10
	4-59	Channery loam, channery clay loam, very channery loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0-10	55-85	50-80	45-75	30-65	25-40	6-15
	59-65	Very channery loam, very channery clay loam, very channery sandy loam	GC-GM, SC, SC-SM	A-1, A-2, A-4, A-6	0	5-20	35-75	30-70	25-65	20-60	12-25	4-12
Lily------------	0-1	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-5	Loam	CL-ML, ML	A-4	0	0-5	90-100	85-100	70-95	55-80	15-35	NP-10
	5-31	Clay loam, sandy clay loam, loam	CL, ML, SC, SM	A-4, A-6	0	0-5	90-100	85-100	75-100	40-80	15-35	3-15
	31-35	Unweathered bedrock			---	---	---	---	---	---	---	---
SbB:												
Sensabaugh------	0-15	Loam, fine sandy loam, silt loam	CL, ML, CL-ML	A-4	0	0-5	90-100	75-95	65-85	55-75	15-30	NP-10
	15-30	Gravelly loam, gravelly silt loam, very gravelly loam	CL, CL-ML	A-4, A-6	0	0-5	70-95	55-90	45-75	35-65	20-35	5-15
	30-65	Very gravelly loam, very gravelly fine sandy loam, very gravelly sandy loam	SC-SM, SC, GC-GM, GC	A-4	0	0-10	55-90	25-75	25-65	20-55	20-35	5-15
SeB:												
Sensabaugh------	0-11	Loam, silt loam, gravelly loam	CL, ML, CL-ML	A-4	0	0-7	86-96	71-92	59-87	43-66	15-30	NP-10
	11-40	Gravelly loam, very gravelly loam, gravelly clay loam, gravelly silt loam, gravelly sandy loam	ML, CL-ML, CL	A-4, A-6	0	5-23	71-87	41-74	34-74	25-59	18-38	3-19
	40-65	Very gravelly loam, very gravelly fine sandy loam, very gravelly silt loam, very gravelly clay loam	SC-SM	A-2, A-4, A-6	0	5-32	61-77	16-54	13-54	9-41	18-37	3-19

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SeB:												
Lobdell---------	0-6	Loam	CL-ML, ML	A-4	0	0-3	95-100	92-100	78-90	62-68	20-43	3-18
	6-38	Sandy loam, loam, silt loam	CL-ML, ML	A-4	0	0-5	93-100	85-100	76-90	57-68	18-38	3-19
	38-65	Sandy loam, loam, silt loam	CL-ML, ML	A-4	0	0-5	90-100	85-100	77-90	53-68	18-37	3-19
Ua:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Ub:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
UcB:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Ud:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Chavies---------	0-8	Loam, loamy sand, fine sandy loam	SC-SM, CL-ML	A-4	---	---	76-100	76-100	58-78	36-50	15-35	NP-10
	8-44	Loam, fine sandy loam	SC-SM, CL-ML	A-4	---	---	76-100	76-100	58-79	36-50	15-35	NP-10
	44-65	Loamy sand, sandy loam, fine sandy loam, loam	SC-SM	A-2	---	---	57-100	57-100	33-58	12-23	15-35	NP
Uf:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Chavies---------	0-8	Loam, loamy sand, fine sandy loam	SC-SM, CL-ML	A-4	---	---	76-100	76-100	58-78	36-50	15-35	NP-10
	8-44	Loam, fine sandy loam	SC-SM, CL-ML	A-4	---	---	76-100	76-100	58-79	36-50	15-35	NP-10
	44-65	Loam, fine sandy loam, sandy loam, loamy sand	SC-SM	A-2	---	---	57-100	57-100	33-58	12-23	15-35	NP
UkB:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Kanawha---------	0-9	Loam	CL-ML	A-6, A-4	---	---	76-100	76-100	69-90	51-68	18-36	NP-12
	9-47	Silt loam, loam, sandy clay loam, clay loam, fine sandy loam	MH	A-7, A-6	---	---	69-100	69-100	67-95	53-75	18-50	NP-12
	47-65	Stratified sandy loam, stratified loam, stratified loamy sand, stratified silt loam	SC-SM	A-2-4, A-4	---	---	27-100	27-100	18-65	10-36	18-36	NP-12

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
UnB:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Kanawha---------	0-9	Loam	CL-ML	A-6, A-4	---	---	76-100	76-100	69-90	51-68	18-36	NP-12
	9-47	Clay loam, fine sandy loam, sandy clay loam, loam, silt loam	MH	A-7, A-6	---	---	69-100	69-100	67-95	53-75	18-50	NP-12
	47-65	Stratified silt loam, stratified sandy loam, stratified loamy sand, stratified loam	SC-SM	A-2-4, A-4	---	---	27-100	27-100	18-65	10-36	18-36	NP-12
UtB:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Kanawha---------	0-9	Loam	CL-ML	A-6, A-4	---	---	76-100	76-100	69-90	51-68	18-36	NP-12
	9-47	Clay loam, fine sandy loam, sandy clay loam, loam, silt loam	MH	A-7, A-6	---	---	69-100	69-100	67-95	53-75	18-50	NP-12
	47-65	Stratified sandy loam, stratified loam, stratified loamy sand, stratified silt loam	SC-SM	A-2-4, A-4	---	---	27-100	27-100	18-65	10-36	18-36	NP-12
Cotaco----------	0-8	Loam	CL-ML	A-6, A-4	---	---	76-100	76-100	71-90	51-67	18-36	NP-12
	8-39	Clay loam, silt loam, loam, sandy clay loam	MH	A-7, A-6	---	---	69-100	69-100	64-95	50-75	18-50	NP-12
	39-65	Gravelly loam, gravelly sandy clay loam, gravelly clay loam, gravelly silt loam	CL-ML	A-6, A-4	---	---	27-100	27-100	25-90	19-67	18-36	NP-12
Ye:												
Yeager----------	0-5	Fine sandy loam, loamy sand, loam	SC-SM, SM	A-2-4, A-4	0	0	76-100	76-100	58-78	35-48	0-41	NP-13
	5-26	Stratified sandy loam, stratified fine sandy loam, stratified sand, stratified loamy sand	SM, SC-SM	A-2-4	0	0	57-100	57-100	33-62	13-22	0-29	NP-10
	26-65	Stratified sandy loam, stratified fine sandy loam, stratified gravelly sand, stratified sand	SM, SC-SM	A-2-4	0	0	57-100	57-100	33-62	13-22	0-29	NP-10

Table 16.--Physical Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
AbB:														
Allegheny------------	0-10	25-60	25-55	15-25	1.20-1.40	4.00-14.00	0.12-0.22	0.0-2.9	1.0-4.0	.32	.32	4	8	0
	10-60	25-60	20-50	17-35	1.20-1.50	4.00-14.00	0.10-0.18	0.0-2.9	0.1-0.5	.28	.28			
	60-80	40-75	15-40	10-30	1.20-1.40	4.00-14.00	0.08-0.17	0.0-2.9	0.1-0.5	.28	.28			
BrG:														
Berks----------------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-5	20-40	40-60	7-27	1.20-1.50	4.00-42.00	0.08-0.12	0.0-2.9	2.0-4.0	.17	.32			
	5-22	20-40	45-65	7-27	1.20-1.60	4.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	22-28	20-40	45-65	7-27	1.20-1.60	14.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	28-38	---	---	---	---	0.00-1.40	---	---	0.1-0.5	---	---			
Rock outcrop---------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
BSF:														
Berks----------------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-5	20-40	40-60	7-27	1.20-1.50	4.00-42.00	0.08-0.12	0.0-2.9	2.0-4.0	.17	.32			
	5-22	20-40	45-65	7-27	1.20-1.60	4.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	22-28	20-40	45-65	7-27	1.20-1.60	14.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	28-38	---	---	---	---	0.00-1.40	---	---	0.1-0.5	---	---			
Shelocta-------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	4	8	0
	0.5-4	20-52	28-65	7-27	1.15-1.30	4.00-14.00	0.12-0.22	0.0-2.9	10-20	.28	.37			
	4-58	10-30	28-60	0-40	1.30-1.55	4.00-14.00	0.10-0.20	0.0-2.9	0.1-1.2	.28	.32			
	58-80	---	---	0-40	1.30-1.55	4.00-14.00	0.10-0.20	---	0.1-1.2	---	---			
Ch:														
Chavies--------------	0-8	23-80	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.18	0.0-2.9	0.5-4.0	.24	.24	4	8	0
	8-44	23-85	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.20	0.0-2.9	0.4-0.7	.24	.24			
	44-65	23-85	5-50	0-15	1.30-1.50	14.00-42.00	0.08-0.18	0.0-2.9	0.1-0.2	.24	.24			
Ck:														
Chavies--------------	0-8	23-80	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.18	0.0-2.9	0.5-4.0	.24	.24	4	8	0
	8-44	23-85	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.20	0.0-2.9	0.4-0.7	.24	.24			
	44-65	23-85	5-50	0-15	1.30-1.50	14.00-42.00	0.08-0.18	0.0-2.9	0.1-0.2	.24	.24			
Cr:														
Craigsville----------	0-7	23-75	15-35	0-20	1.20-1.40	14.00-141.00	0.05-0.15	0.0-2.9	1.0-5.0	.17	.49	3	8	0
	7-30	23-75	15-35	0-20	1.30-1.60	14.00-141.00	0.05-0.15	0.0-2.9	0.3-2.0	.17	.64			
	30-65	23-90	5-50	0-15	1.35-1.55	14.00-141.00	0.05-0.09	0.0-2.9	0.3-1.6	.17	.64			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
FkC:														
Fiveblock------------	0-10	50-75	15-35	5-15	1.35-1.65	14.00-141.00	0.05-0.12	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	10-65	50-75	15-35	5-15	1.35-1.65	14.00-141.00	0.05-0.12	0.0-2.9	0.0-0.1	.32	.43			
Kaymine--------------	0-4	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	4-65	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
FkF:														
Fiveblock------------	0-10	23-75	15-35	5-15	1.35-1.65	14.00-141.00	0.05-0.12	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	10-65	23-75	15-35	5-15	1.35-1.65	14.00-141.00	0.05-0.12	0.0-2.9	0.0-0.1	.32	.43			
Kaymine--------------	0-4	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	4-65	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
GmE:														
Gilpin---------------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-3	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---			
	3-9	---	---	15-27	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	0.5-4.0	.32	.37			
	9-28	---	---	18-45	1.20-1.50	4.00-14.00	0.12-0.14	0.0-2.9	0.2-0.6	.24	.37			
	28-32	---	---	---	---	1.40-4.00	---	---	---	---	---			
	>32	---	---	---	---	---	---	---	---	---	---			
Matewan--------------	0-3	0-0	---	0-0	0.04-0.10	42.00-141.00	0.09-0.12	---	80-90	---	---	2	8	0
	3-4	0-0	---	0-0	0.10-0.30	42.00-141.00	0.09-0.12	---	60-80	---	---			
	4-6	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	6-26	---	---	7-20	1.20-1.50	42.00-141.00	0.06-0.12	0.0-2.9	0.1-2.0	.15	.20			
	26-34	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>34	---	---	---	---	0.07-42.00	---	---	---	---	---			
Gw:														
Grigsby--------------	0-12	23-75	10-50	0-20	1.20-1.40	4.00-42.00	0.10-0.20	0.0-2.9	1.0-4.0	.32	.32	5	8	0
	12-42	23-75	10-30	0-20	1.20-1.50	14.00-42.00	0.10-0.20	0.0-2.9	0.3-2.0	.28	.32			
	42-65	23-75	10-30	0-20	1.20-1.50	14.00-42.00	0.03-0.16	0.0-2.9	0.3-1.6	.28	.32			
HgE:														
Highsplint-----------	0-0.5	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	0.5-3	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	2.0-4.0	.15	.20			
	3-53	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	0.0-1.0	.10	.20			
	53-65	---	---	7-20	1.10-1.30	4.00-42.00	0.05-0.10	0.0-2.9	0.0-1.0	.05	.20			
HMF:														
Highsplint-----------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-11	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	2.0-4.0	.15	.20			
	11-50	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	0.0-1.0	.05	.20			
	50-65	---	---	7-20	1.10-1.30	4.00-42.00	0.05-0.10	0.0-2.9	0.0-1.0	.05	.20			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
HMF:														
Matewan--------------	0-3	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	2	8	0
	3-4	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---			
	4-6	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	6-26	---	---	7-20	1.20-1.50	42.00-141.00	0.06-0.12	0.0-2.9	0.1-2.0	.15	.20			
	26-34	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>34	---	---	---	---	0.07-42.00	---	---	---	---	---			
Cloverlick-----------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-9	---	---	7-27	1.10-1.30	14.00-42.00	0.13-0.20	0.0-2.9	4.0-8.0	.28	.28			
	9-50	---	---	7-27	1.30-1.55	4.00-28.00	0.08-0.17	0.0-2.9	0.0-0.3	.17	.28			
	50-65	---	---	7-20	1.55-1.70	14.00-42.00	0.05-0.12	0.0-2.9	0.0-0.3	.17	.28			
HuE:														
Highsplint-----------	0-0.5	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	0.5-3	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	2.0-4.0	.15	.20			
	3-53	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	0.0-1.0	.10	.20			
	53-65	---	---	7-20	1.10-1.30	4.00-42.00	0.05-0.10	0.0-2.9	0.0-1.0	.05	.20			
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
ImF:														
Itmann---------------	0-5	55-75	10-30	0-20	1.00-1.30	14.00-141.00	0.05-0.12	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	5-65	55-75	10-30	0-20	1.00-1.30	14.00-141.00	0.05-0.12	0.0-2.9	0.0-0.1	.32	.43			
KcF:														
Kaymine--------------	0-4	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	4-65	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
Cedarcreek-----------	0-2	25-45	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.16	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	2-65	25-45	30-50	10-27	1.35-1.65	4.00-42.00	0.04-0.16	0.0-2.9	0.0-0.1	.32	.43			
Matewan--------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	0.5-4	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	4-30	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	0.1-2.0	.15	.20			
	30-33	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>33	---	---	---	---	0.07-42.00	---	---	---	---	---			
KfB:														
Kaymine--------------	0-3	---	---	7-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-1.0	.28	.43	5	8	0
	3-65	---	---	12-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
Fiveblock------------	0-4	---	---	7-27	1.35-1.65	4.20-28.00	0.05-0.12	0.0-2.9	0.1-1.0	.32	.43	5	8	0
	4-65	---	---	7-20	1.35-1.65	4.20-28.00	0.05-0.12	0.0-2.9	0.0-0.1	.32	.43			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
KfF:														
Kaymine--------------	0-3	---	---	7-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-1.0	.28	.43	5	8	0
	3-65	---	---	12-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
Fiveblock------------	0-4	---	---	7-27	1.35-1.65	4.20-28.00	0.05-0.12	0.0-2.9	0.1-1.0	.32	.43	5	8	0
	4-65	---	---	7-20	1.35-1.65	4.20-28.00	0.05-0.12	0.0-2.9	0.0-0.1	.32	.43			
KrF:														
Kaymine--------------	0-4	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.5-0.5	.32	.43	5	8	0
	4-65	30-50	30-50	10-27	1.35-1.65	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.1	.32	.43			
Rock outcrop---------	---	---	---	---	---	---	---	---	---	---	---	1	8	0
LmE:														
Lily-----------------	0-0.5	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	2	8	0
	0.5-4	23-75	15-50	0-20	1.20-1.40	4.00-42.00	0.10-0.18	0.0-2.9	0.5-4.0	.17	.37			
	4-26	23-75	10-50	0-35	1.20-1.50	4.00-42.00	0.10-0.18	0.0-2.9	0.2-0.9	.17	.49			
	26-28	23-75	10-50	0-35	1.20-1.50	4.00-42.00	---	---	0.2-0.3	---	---			
	28-37	---	---	---	1.20-1.50	0.00-1.40	---	---	0.2-0.3	---	---			
	>37	---	---	---	---	0.00-0.00	---	---	---	---	---			
Matewan--------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	0.5-4	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	4-30	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	0.1-2.0	.15	.20			
	30-33	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>33	---	---	---	---	0.07-42.00	---	---	---	---	---			
MHF:														
Matewan--------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	0.5-4	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	4-30	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	0.1-2.0	.15	.20			
	30-33	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>33	---	---	---	---	0.07-42.00	---	---	---	---	---			
Highsplint-----------	0-0.5	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	0.5-3	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	2.0-4.0	.15	.20			
	3-53	---	---	7-27	1.10-1.30	4.00-42.00	0.07-0.15	0.0-2.9	0.0-1.0	.10	.20			
	53-65	---	---	7-20	1.10-1.30	4.00-42.00	0.05-0.10	0.0-2.9	0.0-1.0	.05	.20			
Guyandotte-----------	0-1	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	5	8	0
	1-14	23-50	30-50	10-27	1.00-1.30	4.00-42.00	0.10-0.20	0.0-2.9	2.0-10	.10	.49			
	14-65	23-50	30-50	10-27	1.30-1.60	4.00-42.00	0.05-0.15	0.0-2.9	0.2-1.5	.17	.64			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
MnE:														
Matewan--------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	0.5-4	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	4-30	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	0.1-2.0	.15	.20			
	30-33	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>33	---	---	---	---	0.07-42.00	---	---	---	---	---			
Latham---------------	0-4	10-30	55-75	5-27	1.30-1.50	4.00-14.00	0.16-0.20	0.0-2.9	5.2-12	.43	.49	3	8	0
	4-29	5-20	40-60	39-59	1.40-1.70	0.42-1.40	0.11-0.15	6.0-8.9	0.7-1.3	.32	.43			
	29-34	5-20	40-60	41-59	1.40-1.70	0.42-1.40	0.11-0.15	---	0.3-0.4	---	---			
	34-38	---	---	---	---	0.20-1.40	---	---	---	---	---			
MPF:														
Matewan--------------	0-0.5	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	0.5-4	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	2.0-4.0	.15	.20			
	4-30	---	---	7-20	1.20-1.50	42.00-141.00	0.08-0.12	0.0-2.9	0.1-2.0	.15	.20			
	30-33	---	---	7-20	1.20-1.50	42.00-141.00	0.05-0.10	0.0-2.9	0.0-1.0	.15	.20			
	>33	---	---	---	---	0.07-42.00	---	---	---	---	---			
Pineville------------	0-1	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	5	8	0
	1-4	30-50	30-50	7-27	1.00-1.30	4.00-14.00	0.12-0.18	0.0-2.9	4.0-15	.20	.24			
	4-59	30-50	30-50	7-27	1.30-1.60	4.00-14.00	0.08-0.14	0.0-2.9	0.6-1.4	.15	.17			
	59-65	30-50	30-50	7-27	1.30-1.60	4.00-42.00	0.06-0.14	0.0-2.9	0.1-0.6	.15	.20			
Guyandotte-----------	0-1	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	5	8	0
	1-14	23-50	30-50	10-27	1.00-1.30	4.00-42.00	0.10-0.16	0.0-2.9	2.0-10	.10	.49			
	14-65	23-50	30-50	10-27	1.30-1.60	4.00-42.00	0.05-0.15	0.0-2.9	0.2-1.5	.17	.64			
PBF:														
Pineville------------	0-1	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	5	8	0
	1-4	30-50	30-50	7-27	1.00-1.30	4.00-14.00	0.12-0.18	0.0-2.9	4.0-15	.20	.24			
	4-59	30-50	30-50	7-27	1.30-1.60	4.00-14.00	0.08-0.14	0.0-2.9	0.6-1.4	.15	.17			
	59-65	30-50	30-50	7-27	1.30-1.60	4.00-42.00	0.06-0.14	0.0-2.9	0.1-0.6	.15	.20			
Berks----------------	0-2	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	3	8	0
	2-5	20-40	40-60	7-27	1.20-1.50	4.00-42.00	0.08-0.12	0.0-2.9	2.0-4.0	.17	.32			
	5-22	20-40	45-65	7-27	1.20-1.60	4.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	22-28	20-40	45-65	7-27	1.20-1.60	14.00-42.00	0.04-0.10	0.0-2.9	0.1-0.5	.17	.24			
	28-38	---	---	---	---	0.00-1.40	---	---	0.1-0.5	---	---			
PnE:														
Pineville------------	0-1	---	---	0-0	0.04-0.10	42.00-141.00	---	---	80-90	---	---	4	8	0
	1-4	23-52	28-50	15-25	1.00-1.30	4.00-14.00	0.10-0.16	0.0-2.9	0.5-5.0	.20	.24			
	4-59	20-52	15-53	7-40	1.30-1.60	4.00-14.00	0.08-0.14	0.0-2.9	0.2-1.3	.15	.17			
	59-65	20-85	0-53	7-40	1.30-1.60	4.00-42.00	0.06-0.14	0.0-2.9	0.1-0.6	.15	.20			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
PnE:														
Lily------------------	0-1	---	---	0-0	0.10-0.30	42.00-141.00	---	---	60-80	---	---	2	8	0
	1-5	23-52	28-50	7-27	1.20-1.40	4.00-42.00	0.13-0.18	0.0-2.9	0.5-4.0	.28	.37			
	5-31	20-80	0-53	7-35	1.25-1.35	14.00-42.00	0.12-0.18	0.0-2.9	0.2-0.9	.28	.28			
	31-35	---	---	---	---	1.40-4.00	---	---	0.2-0.3	---	---			
SbB:														
Sensabaugh-----------	0-15	---	28-50	8-25	1.25-1.40	4.20-42.00	0.12-0.22	0.0-2.9	2.0-4.0	.24	.24	5	8	0
	15-30	---	28-50	8-25	1.25-1.40	5.00-42.00	0.10-0.16	0.0-2.9	0.5-0.7	.17	.24			
	30-65	---	28-50	7-20	1.20-1.50	11.00-42.00	0.06-0.14	0.0-2.9	0.1-0.2	.17	.20			
SeB:														
Sensabaugh-----------	0-11	30-50	28-50	14-25	1.25-1.40	4.20-42.00	0.12-0.18	0.0-2.9	2.0-4.0	.24	.24	5	8	0
	11-40	30-60	22-57	14-32	1.25-1.40	5.00-42.00	0.10-0.16	0.0-2.9	0.2-0.6	---	---			
	40-65	30-70	22-55	10-30	1.20-1.50	10.00-42.00	0.08-0.14	0.0-2.9	0.1-0.2	---	---			
Lobdell--------------	0-6	30-50	30-50	10-25	1.20-1.40	4.00-14.00	0.20-0.24	0.0-2.9	1.0-3.0	.37	.37	5	8	0
	6-38	30-50	30-50	10-25	1.25-1.60	4.00-14.00	0.17-0.22	0.0-2.9	0.1-0.5	.37	.43			
	38-65	30-50	30-50	10-25	1.20-1.60	4.00-42.00	0.12-0.18	0.0-2.9	0.1-0.3	.37	.43			
Ua:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Ub:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
UcB:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Ud:														
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Chavies--------------	0-8	23-80	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.18	0.0-2.9	0.5-4.0	.24	.24	4	8	0
	8-44	23-85	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.20	0.0-2.9	0.4-0.7	.24	.24			
	44-65	23-85	5-50	0-15	1.30-1.50	14.00-42.00	0.08-0.18	0.0-2.9	0.1-0.2	.24	.24			
Uf:														
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Chavies--------------	0-8	23-80	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.18	0.0-2.9	0.5-4.0	.24	.24	4	8	0
	8-44	23-85	10-30	8-20	1.20-1.40	14.00-42.00	0.11-0.20	0.0-2.9	0.4-0.7	.24	.24			
	44-65	23-85	5-50	0-15	1.30-1.50	14.00-42.00	0.08-0.18	0.0-2.9	0.1-0.2	.24	.24			

Table 16.--Physical Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
UkB:														
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Kanawha--------------	0-9	30-50	20-40	7-27	1.20-1.40	4.00-14.00	0.16-0.22	0.0-2.9	3.0-5.0	.32	.37	5	8	0
	9-47	30-50	20-80	7-40	1.30-1.50	4.00-14.00	0.14-0.18	0.0-2.9	0.3-0.5	.28	.32			
	47-65	30-85	5-80	0-15	1.30-1.50	4.00-42.00	0.10-0.18	0.0-2.9	0.1-0.5	.24	.32			
UnB:														
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	8	0
Kanawha--------------	0-9	30-50	20-40	7-27	1.20-1.40	4.00-14.00	0.16-0.22	0.0-2.9	3.0-5.0	.32	.37	5	8	0
	9-47	30-50	20-80	7-40	1.30-1.50	4.00-14.00	0.14-0.18	0.0-2.9	0.3-0.5	.28	.32			
	47-65	30-85	5-80	0-15	1.30-1.50	4.00-42.00	0.10-0.18	0.0-2.9	0.1-0.5	.24	.32			
UtB:														
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	1	8	0
Kanawha--------------	0-9	30-50	20-40	7-27	1.20-1.40	4.00-14.00	0.16-0.22	0.0-2.9	3.0-5.0	.32	.37	5	8	0
	9-47	30-50	20-80	7-40	1.30-1.50	4.00-14.00	0.14-0.18	0.0-2.9	0.3-0.5	.28	.32			
	47-65	30-85	5-80	0-15	1.30-1.50	4.00-42.00	0.10-0.18	0.0-2.9	0.1-0.5	.24	.32			
Cotaco---------------	0-8	30-50	30-50	7-27	1.20-1.40	4.00-42.00	0.12-0.20	0.0-2.9	2.0-4.0	.37	.43	3	8	0
	8-39	25-80	25-80	7-40	1.20-1.50	4.00-14.00	0.07-0.15	0.0-2.9	0.2-0.5	.28	.32			
	39-65	30-50	10-80	7-27	1.20-1.50	4.00-14.00	0.07-0.15	0.0-2.9	0.1-0.5	.28	.32			
Ye:														
Yeager---------------	0-5	23-80	10-30	0-20	1.40-1.60	14.00-141.00	0.08-0.18	0.0-2.9	2.0-5.0	.17	.17	5	8	0
	5-26	23-90	5-20	0-15	1.40-1.70	14.00-141.00	0.05-0.10	0.0-2.9	0.6-1.3	.15	.15			
	26-65	23-90	5-20	0-15	1.40-1.70	14.00-141.00	0.05-0.10	0.0-2.9	0.6-1.3	.15	.15			

Table 17.--Chemical Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
AbB:				
Allegheny	0-10	6.0-16	4.5-12	3.6-5.5
	10-60	4.7-9.9	3.5-7.4	3.6-5.5
	60-80	2.5-9.9	1.9-7.4	3.6-5.5
BrG:				
Berks	0-2	60-125	60-94	3.6-5.5
	2-5	10-33	8.0-25	3.6-5.5
	5-22	1.0-9.0	1.0-10	3.6-5.5
	22-28	1.0-6.0	1.0-6.0	3.6-5.5
	28-38	1.0-6.0	1.0-6.0	---
Rock outcrop	---	---	---	---
BSF:				
Berks	0-2	60-125	60-94	3.6-5.5
	2-5	10-33	8.0-25	3.6-5.5
	5-22	1.0-9.0	1.0-10	3.6-5.5
	22-28	1.0-6.0	1.0-6.0	3.6-5.5
	28-38	1.0-6.0	1.0-6.0	---
Shelocta	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	15-41	7.3-19	3.5-5.5
	4-58	8.4-13	4.1-11	3.5-5.5
	58-80	---	0.0-19	3.5-5.5
Ch:				
Chavies	0-8	1.1-16	0.8-12	4.5-7.3
	8-44	3.4-11	2.5-7.3	4.5-7.3
	44-65	2.7-6.8	2.0-5.3	4.5-6.0
Ck:				
Chavies	0-8	1.1-16	0.8-12	4.5-7.3
	8-44	3.4-11	2.5-7.3	4.5-7.3
	44-65	2.7-6.8	2.0-5.3	4.5-6.0
Cr:				
Craigsville	0-7	4.0-16	3.0-12	4.5-5.5
	7-30	2.4-9.8	1.8-7.3	4.5-5.5
	30-65	0.7-7.1	0.5-5.3	4.5-5.5
FkC:				
Fiveblock	0-10	1.1-6.1	0.8-4.6	5.6-7.8
	10-65	0.0-5.2	0.0-3.9	5.6-7.8
Kaymine	0-4	3.6-11	2.7-7.9	5.6-8.4
	4-65	0.0-9.7	0.0-7.3	5.6-8.4
FkF:				
Fiveblock	0-10	1.1-6.1	0.8-4.6	5.6-7.8
	10-65	0.0-5.2	0.0-3.9	5.6-7.8
Kaymine	0-4	3.6-11	2.7-7.9	5.6-8.4
	4-65	0.0-9.7	0.0-7.3	5.6-8.4

Table 17.--Chemical Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
GmE:				
Gilpin---------------	0-2	60-125	60-94	3.6-5.5
	2-3	60-125	60-94	3.6-5.5
	3-9	1.1-16	0.8-12	3.6-5.5
	9-28	5.0-11	3.7-8.5	3.6-5.5
	28-32	---	---	---
	>32	---	---	---
Matewan--------------	0-3	60-125	60-94	4.5-6.0
	3-4	60-125	60-94	4.5-6.0
	4-6	7.0-18	5.2-14	4.5-6.0
	6-26	2.0-9.0	1.5-6.8	4.5-6.0
	26-34	1.3-6.0	1.0-4.5	4.5-6.0
	>34	---	---	---
Gw:				
Grigsby--------------	0-12	4.0-14	3.0-11	5.6-7.3
	12-42	2.4-11	1.8-8.1	5.6-7.3
	42-65	2.4-11	1.8-8.0	5.1-7.3
HgE:				
Highsplint-----------	0-0.5	60-125	60-94	3.6-5.5
	0.5-3	15-30	8.0-14	4.5-6.0
	3-53	5.0-10	2.0-6.0	4.5-5.5
	53-65	5.0-10	3.0-7.0	4.5-5.5
HMF:				
Highsplint-----------	0-2	60-125	60-94	4.5-6.0
	2-11	15-30	8.0-14	4.5-6.0
	11-50	5.0-10	2.0-6.0	4.5-5.5
	50-65	5.0-10	3.0-7.0	4.5-5.5
Matewan--------------	0-3	60-125	60-94	4.5-6.0
	3-4	60-125	60-94	4.5-6.0
	4-6	7.0-18	5.2-14	4.5-6.0
	6-26	2.0-9.0	1.5-6.8	4.5-6.0
	26-34	1.3-6.0	1.0-4.5	4.5-6.0
	>34	---	---	---
Cloverlick-----------	0-2	60-125	60-94	3.6-5.5
	2-9	6.0-16	3.0-12	5.1-6.5
	9-50	4.0-10	2.0-10	4.5-6.0
	50-65	5.0-12	2.0-10	4.5-5.5
HuE:				
Highsplint-----------	0-0.5	60-125	60-94	3.6-5.5
	0.5-3	15-30	8.0-14	4.5-6.0
	3-53	5.0-10	2.0-6.0	4.5-5.5
	53-65	5.0-10	3.0-7.0	4.5-5.5
Urban land-----------	---	---	---	---
ImF:				
Itmann---------------	0-5	1.1-6.1	0.8-4.6	3.6-5.5
	5-65	0.0-7.0	0.0-5.2	3.6-5.5
KcF:				
Kaymine--------------	0-4	3.6-11	2.7-7.9	5.6-8.4
	4-65	0.0-9.7	0.0-7.3	5.6-8.4

Table 17.--Chemical Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
KcF:				
Cedarcreek-----------	0-2	3.6-11	2.7-7.9	3.6-5.5
	2-65	6.3-9.7	4.7-7.3	3.6-5.5
Matewan--------------	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	7.0-18	5.2-14	4.5-6.0
	4-30	2.0-9.0	1.5-6.8	4.5-6.0
	30-33	1.3-6.0	1.0-4.5	4.5-6.0
	>33	---	---	---
KfB:				
Kaymine--------------	0-3	3.6-11	2.7-7.9	5.6-8.4
	3-65	0.0-9.7	0.0-7.3	5.6-8.4
Fiveblock------------	0-4	1.1-6.1	0.8-4.6	5.6-7.8
	4-65	0.0-5.2	0.0-3.9	5.6-7.8
KfF:				
Kaymine--------------	0-3	3.6-11	2.7-7.9	5.6-8.4
	3-65	0.0-9.7	0.0-7.3	5.6-8.4
Fiveblock------------	0-4	1.1-6.1	0.8-4.6	5.6-7.8
	4-65	0.0-5.2	0.0-3.9	5.6-7.8
KrF:				
Kaymine--------------	0-4	3.6-11	2.7-7.9	5.6-8.4
	4-65	0.0-9.7	0.0-7.3	5.6-8.4
Rock outcrop---------	---	---	---	---
LmE:				
Lily-----------------	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	2.9-16	2.2-12	4.5-6.0
	4-26	5.1-12	3.8-9.1	4.5-6.0
	26-28	5.4-9.3	4.0-7.0	---
	28-37	5.4-9.3	4.0-7.0	---
	>37	---	---	---
Matewan--------------	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	7.0-18	5.2-14	4.5-6.0
	4-30	2.0-9.0	1.5-6.8	4.5-6.0
	30-33	1.3-6.0	1.0-4.5	4.5-6.0
	>33	---	---	---
MHF:				
Matewan--------------	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	7.0-18	5.2-14	4.5-6.0
	4-30	2.0-9.0	1.5-6.8	4.5-6.0
	30-33	1.3-6.0	1.0-4.5	4.5-6.0
	>33	---	---	---
Highsplint-----------	0-0.5	60-125	60-94	3.6-5.5
	0.5-3	15-30	8.0-14	4.5-6.0
	3-53	5.0-10	2.0-6.0	4.5-5.5
	53-65	5.0-10	3.0-7.0	4.5-5.5
Guyandotte-----------	0-1	60-125	60-94	3.6-5.5
	1-14	4.5-32	3.4-24	4.5-7.3
	14-65	2.2-13	1.7-9.6	4.5-6.0

Table 17.--Chemical Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
MnE:				
Matewan	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	7.0-18	5.2-14	4.5-6.0
	4-30	2.0-9.0	1.5-6.8	4.5-6.0
	30-33	1.3-6.0	1.0-4.5	4.5-6.0
	>33	---	---	---
Latham	0-4	15-25	8.1-13	3.6-6.5
	4-29	11-14	6.7-9.0	3.6-5.0
	29-34	9.9-26	6.7-11	---
	34-38	---	---	---
MPF:				
Matewan	0-0.5	60-125	60-94	3.6-5.5
	0.5-4	7.0-18	5.2-14	4.5-6.0
	4-30	2.0-9.0	1.5-6.8	4.5-6.0
	30-33	1.3-6.0	1.0-4.5	4.5-6.0
	>33	---	---	---
Pineville	0-1	60-125	60-94	3.6-5.5
	1-4	6.4-20	4.8-15	3.6-6.5
	4-59	6.6-14	5.0-10	3.6-5.5
	59-65	5.7-12	4.3-8.9	3.6-5.5
Guyandotte	0-1	60-125	60-94	3.6-5.5
	1-14	4.5-32	3.4-24	4.5-7.3
	14-65	2.2-13	1.7-9.6	4.5-6.0
PBF:				
Pineville	0-1	60-125	60-94	3.6-5.5
	1-4	6.4-20	4.8-15	3.6-6.5
	4-59	6.6-14	5.0-10	3.6-5.5
	59-65	5.7-12	4.3-8.9	3.6-5.5
Berks	0-2	60-125	60-94	3.6-5.5
	2-5	10-33	8.0-25	3.6-5.5
	5-22	1.0-9.0	1.0-10	3.6-5.5
	22-28	1.0-6.0	1.0-6.0	3.6-5.5
	28-38	1.0-6.0	1.0-6.0	---
PnE:				
Pineville	0-1	60-125	60-94	3.6-5.5
	1-4	6.0-20	5.0-15	3.6-7.3
	4-59	7.0-14	5.0-10	3.6-5.5
	59-65	6.0-12	4.0-9.0	3.6-5.5
Lily	0-1	60-125	60-94	3.6-5.5
	1-5	3.0-16	2.0-12	3.6-5.5
	5-31	5.0-12	4.0-9.0	3.6-5.5
	31-35	5.0-9.0	4.0-7.0	---
SbB:				
Sensabaugh	0-15	5.0-15	4.0-11	5.6-7.8
	15-30	6.0-11	5.0-8.0	5.6-7.8
	30-65	4.0-12	3.0-9.0	5.6-7.8
SeB:				
Sensabaugh	0-11	5.0-15	4.0-11	5.6-7.8
	11-40	6.0-11	5.0-8.0	5.6-7.8
	40-65	4.0-12	3.0-9.0	5.6-7.8

Table 17.--Chemical Properties--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
SeB:				
Lobdell	0-6	8.0-10	4.0-6.0	5.1-7.3
	6-38	6.0-8.0	3.0-5.0	5.1-7.3
	38-65	5.0-8.0	2.0-5.0	5.6-7.3
Ua:				
Udorthents	---	---	---	---
Ub:				
Udorthents	---	---	---	---
UcB:				
Udorthents	---	---	---	---
Urban land	---	---	---	---
Ud:				
Urban land	---	---	---	---
Chavies	0-8	1.1-16	0.8-12	4.5-7.3
	8-44	3.4-11	2.5-7.3	4.5-7.3
	44-65	2.7-6.8	2.0-5.3	4.5-6.0
Uf:				
Urban land	---	---	---	---
Chavies	0-8	1.1-16	0.8-12	4.5-7.3
	8-44	3.4-11	2.5-7.3	4.5-7.3
	44-65	2.7-6.8	2.0-5.3	4.5-6.0
UkB:				
Urban land	---	---	---	---
Kanawha	0-9	5.0-9.0	1.0-5.0	5.1-6.0
	9-47	3.0-9.0	1.0-5.0	5.6-6.5
	47-65	2.0-7.0	1.0-5.0	5.6-6.5
UnB:				
Urban land	---	---	---	---
Kanawha	0-9	5.0-9.0	1.0-5.0	5.1-6.0
	9-47	3.0-9.0	1.0-5.0	5.6-6.5
	47-65	2.0-7.0	1.0-5.0	5.6-6.5
UtB:				
Urban land	---	---	---	---
Kanawha	0-9	5.0-9.0	1.0-5.0	5.1-6.0
	9-47	3.0-9.0	1.0-5.0	5.6-6.5
	47-65	2.0-7.0	1.0-5.0	5.6-6.5
Cotaco	0-8	7.0-16	5.2-12	3.6-5.5
	8-39	4.5-9.9	3.4-7.4	3.6-5.5
	39-65	2.5-9.9	1.9-7.4	3.6-5.5
Ye:				
Yeager	0-5	7.5-10	5.6-7.5	4.5-7.3
	5-26	2.9-7.0	2.2-5.3	4.5-6.0
	26-65	2.9-7.0	2.2-5.3	4.5-6.0

Table 18.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Flooding	
				Upper limit	Lower limit	Duration	Frequency
				Ft	Ft		
AbB:							
Allegheny	B	Medium	Jan-Dec	---	---	---	None
BrG:							
Berks	C	Very high	Jan-Dec	---	---	---	None
Rock outcrop	---	---	Jan-Dec	---	---	---	---
BSF:							
Berks	C	Very high	Jan-Dec	---	---	---	None
Shelocta	B	High	Jan-Dec	---	---	---	None
Ch:							
Chavies	B	Very low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
Ck:							
Chavies	B	Very low	Jan-Dec	---	---	---	None
Cr:							
Craigsville	B	Very low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
FkC:							
Fiveblock	C	Low	Jan-Dec	---	---	---	None
Kaymine	C	Low	Jan-Dec	---	---	---	None
FkF:							
Fiveblock	C	Medium	Jan-Dec	---	---	---	None
Kaymine	C	Medium	Jan-Dec	---	---	---	None
GmE:							
Gilpin	C	High	Jan-Dec	---	---	---	None
Matewan	C	High	Jan-Dec	---	---	---	None

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
				Ft	Ft		
Gw:							
Grigsby-------------------	B	Very low	January	3.5-6.0	>6.0	Brief	Occasional
			February	3.5-6.0	>6.0	Brief	Occasional
			March	3.5-6.0	>6.0	Brief	Occasional
			April	3.5-6.0	>6.0	Brief	Occasional
			May	4.5-6.0	>6.0	Brief	Occasional
			June	4.5-6.0	>6.0	Very brief	Rare
			July	4.5-6.0	>6.0	Very brief	Rare
			August	4.5-6.0	>6.0	Very brief	Rare
			September	4.5-6.0	>6.0	Very brief	Rare
			October	4.5-6.0	>6.0	Very brief	Rare
			November	4.5-6.0	>6.0	Brief	Occasional
			December	4.5-6.0	>6.0	Brief	Occasional
HgE:							
Highsplint----------------	B	Medium	Jan-Dec	---	---	---	None
HMF:							
Highsplint----------------	B	Very high	Jan-Dec	---	---	---	None
Matewan-------------------	C	Very high	Jan-Dec	---	---	---	None
Cloverlick----------------	B	Very high	Jan-Dec	---	---	---	None
HuE:							
Highsplint----------------	B	Medium	Jan-Dec	---	---	---	None
Urban land----------------	D	---	Jan-Dec	---	---	---	None
ImF:							
Itmann--------------------	C	Medium	Jan-Dec	---	---	---	None
KcF:							
Kaymine-------------------	C	Medium	Jan-Dec	---	---	---	None
Cedarcreek----------------	C	Medium	Jan-Dec	---	---	---	None
Matewan-------------------	C	Medium	Jan-Dec	---	---	---	None
KfB:							
Kaymine-------------------	C	Very low	Jan-Dec	---	---	---	None
Fiveblock-----------------	C	Very low	Jan-Dec	---	---	---	None
KfF:							
Kaymine-------------------	C	Very high	Jan-Dec	---	---	---	None
Fiveblock-----------------	C	Very high	Jan-Dec	---	---	---	None
KrF:							
Kaymine-------------------	C	Medium	Jan-Dec	---	---	---	None
Rock outcrop--------------	D	---	Jan-Dec	---	---	---	None
LmE:							
Lily----------------------	C	Very high	Jan-Dec	---	---	---	None
Matewan-------------------	C	Medium	Jan-Dec	---	---	---	None
MHF:							
Matewan-------------------	C	Medium	Jan-Dec	---	---	---	None

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table Upper limit	Water table Lower limit	Flooding Duration	Flooding Frequency
				Ft	Ft		
MHF:							
Highsplint	B	Medium	Jan-Dec	---	---	---	None
Guyandotte	B	Medium	Jan-Dec	---	---	---	None
MnE:							
Matewan	C	Medium	Jan-Dec	---	---	---	None
Latham	D	Very high	January	1.5-3.0	3.0-4.5	---	None
			February	1.5-3.0	3.0-4.5	---	None
			March	1.5-3.0	3.0-4.5	---	None
			April	1.5-3.0	3.0-4.5	---	None
			May	2.5-4.0	4.0-5.5	---	None
			June	---	---	---	None
			July	---	---	---	None
			August	---	---	---	None
			September	---	---	---	None
			October	---	---	---	None
			November	2.5-4.0	4.0-5.5	---	None
			December	2.5-4.0	4.0-5.5	---	None
MPF:							
Matewan	C	Medium	Jan-Dec	---	---	---	None
Pineville	B	High	Jan-Dec	---	---	---	None
Guyandotte	B	Medium	Jan-Dec	---	---	---	None
PBF:							
Pineville	B	High	Jan-Dec	---	---	---	None
Berks	C	Very high	Jan-Dec	---	---	---	None
PnE:							
Pineville	B	---	Jan-Dec	---	---	---	None
Lily	B	---	Jan-Dec	---	---	---	None
SbB:							
Sensabaugh	B	Very low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
				Ft	Ft		
SeB:							
Sensabaugh	B	Low	January	4.0-6.0	>6.0	Very brief	Rare
			February	4.0-6.0	>6.0	Very brief	Rare
			March	4.0-6.0	>6.0	Very brief	Rare
			April	4.0-6.0	>6.0	Very brief	Rare
			May	5.0-6.0	>6.0	Very brief	Rare
			June	5.0-6.0	>6.0	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	5.0-6.0	>6.0	Very brief	Rare
Lobdell	B	Medium	January	1.5-3.0	>6.0	Brief	Occasional
			February	1.5-3.0	>6.0	Brief	Occasional
			March	1.5-3.0	>6.0	Brief	Occasional
			April	1.5-3.0	>6.0	Brief	Occasional
			May	2.0-3.5	>6.0	Brief	Occasional
			June	2.0-3.5	>6.0	Very brief	Rare
			July	2.0-3.5	>6.0	Very brief	Rare
			August	3.0-6.0	>6.0	Very brief	Rare
			September	3.0-6.0	>6.0	Very brief	Rare
			October	3.0-6.0	>6.0	Very brief	Rare
			November	2.0-3.5	>6.0	Brief	Occasional
			December	2.0-3.5	>6.0	Brief	Occasional
Ua:							
Udorthents	---	Very high	Jan-Dec	---	---	---	None
Ub:							
Udorthents	---	Very high	Jan-Dec	---	---	---	None
UcB:							
Udorthents	D	Very high	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
Urban land	D	---	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
				Ft	Ft		
Ud:							
Urban land	D	---	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
Chavies	B	Very low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
Uf:							
Urban land	D	---	January	---	---	Very brief	Very rare
			February	---	---	Very brief	Very rare
			March	---	---	Very brief	Very rare
			April	---	---	Very brief	Very rare
			May	---	---	Very brief	Very rare
			June	---	---	Very brief	Very rare
			July	---	---	Very brief	Very rare
			August	---	---	Very brief	Very rare
			September	---	---	Very brief	Very rare
			October	---	---	Very brief	Very rare
			November	---	---	Very brief	Very rare
			December	---	---	Very brief	Very rare
Chavies	B	Very low	Jan-Dec	---	---	---	None
UkB:							
Urban land	D	---	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
				Ft	Ft		
UkB:							
Kanawha	B	Low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
UnB:							
Urban land	D	---	January	---	---	Very brief	Very rare
			February	---	---	Very brief	Very rare
			March	---	---	Very brief	Very rare
			April	---	---	Very brief	Very rare
			May	---	---	Very brief	Very rare
			June	---	---	Very brief	Very rare
			July	---	---	Very brief	Very rare
			August	---	---	Very brief	Very rare
			September	---	---	Very brief	Very rare
			October	---	---	Very brief	Very rare
			November	---	---	Very brief	Very rare
			December	---	---	Very brief	Very rare
Kanawha	B	Low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
UtB:							
Urban land	D	---					
			January	---	---	Brief	Rare
			February	---	---	Brief	Rare
			March	---	---	Brief	Rare
			April	---	---	Brief	Rare
			May	---	---	Brief	Rare
			June	---	---	Brief	Rare
			July	---	---	Brief	Rare
			August	---	---	Brief	Rare
			September	---	---	Brief	Rare
			October	---	---	Brief	Rare
			November	---	---	Brief	Rare
			December	---	---	Brief	Rare

Table 18.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
				Ft	Ft		
UtB:							
Kanawha-------------------	B	Low	January	---	---	Very brief	Rare
			February	---	---	Very brief	Rare
			March	---	---	Very brief	Rare
			April	---	---	Very brief	Rare
			May	---	---	Very brief	Rare
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Very brief	Rare
			December	---	---	Very brief	Rare
Cotaco--------------------	C	Low	January	1.5-2.5	>6.0	Brief	Rare
			February	1.5-2.5	>6.0	Brief	Rare
			March	1.5-2.5	>6.0	Brief	Rare
			April	1.5-2.5	>6.0	Brief	Rare
			May	1.5-2.5	>6.0	Brief	Rare
			June	---	---	Brief	Rare
			July	---	---	Brief	Rare
			August	---	---	Brief	Rare
			September	---	---	Brief	Rare
			October	---	---	Brief	Rare
			November	1.5-2.5	>6.0	Brief	Rare
			December	1.5-2.5	>6.0	Brief	Rare
Ye:							
Yeager--------------------	A	Very low	January	4.0-6.0	>6.0	Brief	Occasional
			February	4.0-6.0	>6.0	Brief	Occasional
			March	4.0-6.0	>6.0	Brief	Occasional
			April	4.0-6.0	>6.0	Brief	Occasional
			May	4.0-6.0	>6.0	Brief	Occasional
			June	---	---	Very brief	Rare
			July	---	---	Very brief	Rare
			August	---	---	Very brief	Rare
			September	---	---	Very brief	Rare
			October	---	---	Very brief	Rare
			November	---	---	Brief	Occasional
			December	4.0-6.0	>6.0	Brief	Occasional

Table 19.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
AbB:							
Allegheny	---	---	---	---	None	Low	High
BrG:							
Berks	Paralithic bedrock	28-32	---	Moderately cemented	Low	Low	High
Rock outcrop	---	---	---	---	---	---	---
BSF:							
Berks	Paralithic bedrock	28-32	---	Moderately cemented	Low	Low	High
Shelocta	Lithic bedrock	59-96	---	Strongly cemented	Moderate	Low	High
Ch:							
Chavies	---	---	---	---	---	Low	Moderate
Ck:							
Chavies	---	---	---	---	---	Low	Moderate
Cr:							
Craigsville	---	---	---	---	Moderate	Low	Moderate
FkC:							
Fiveblock	---	---	---	---	Moderate	Low	Low
Kaymine	---	---	---	---	Moderate	Low	Low
FkF:							
Fiveblock	---	---	---	---	Moderate	Low	Low
Kaymine	---	---	---	---	Moderate	Low	Low
GmE:							
Gilpin	Paralithic bedrock	20-40	---	Moderately cemented	Moderate	Low	High
	Lithic bedrock	28-40	---	Very strongly cemented			
Matewan	Lithic bedrock	20-38	---	Strongly cemented	Low	Low	High

Table 19.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
Gw:							
Grigsby----------------	---	---	---	---	None	Low	Low
HgE:							
Highsplint-------------	---	---	---	---	---	Low	High
HMF:							
Highsplint-------------	---	---	---	---	Moderate	Low	High
Matewan----------------	Lithic bedrock	20-38	---	Strongly cemented	Low	Low	High
Cloverlick-------------	---	---	---	---	Moderate	Low	High
HuE:							
Highsplint-------------	---	---	---	---	---	Low	High
Urban land-------------	---	---	---	---	---	---	---
ImF:							
Itmann-----------------	---	---	---	---	Moderate	High	High
KcF:							
Kaymine----------------	---	---	---	---	Moderate	Low	Low
Cedarcreek-------------	---	---	---	---	Moderate	Moderate	High
Matewan----------------	Lithic bedrock	34-38	---	Strongly cemented	Low	Low	High
KfB:							
Kaymine----------------	---	---	---	---	Moderate	Low	Low
Fiveblock--------------	---	---	---	---	Moderate	Low	Low
KfF:							
Kaymine----------------	---	---	---	---	Moderate	Low	Low
Fiveblock--------------	---	---	---	---	Moderate	Low	Low
KrF:							
Kaymine----------------	---	---	---	---	Moderate	Low	Low
Rock outcrop-----------	Lithic bedrock	0-0	---	Very strongly cemented	None	---	---

Table 19.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
LmE:							
Lily-------------------	Paralithic bedrock	28-37	---	Moderately cemented	Low	Low	High
	Lithic bedrock	37-41	---	Strongly cemented			
Matewan----------------	Lithic bedrock	34-38	---	Strongly cemented	Low	Low	High
MHF:							
Matewan----------------	Lithic bedrock	34-38	---	Strongly cemented	Low	Low	High
Highsplint-------------	---	---	---	---	---	Low	High
Guyandotte-------------	---	---	---	---	Low	Low	High
MnE:							
Matewan----------------	Lithic bedrock	34-38	---	Strongly cemented	Low	Low	High
Latham-----------------	Paralithic bedrock	34-38	---	Moderately cemented	High	High	High
MPF:							
Matewan----------------	Lithic bedrock	34-38	---	Strongly cemented	Low	Low	High
Pineville--------------	---	---	---	---	Moderate	Low	High
Guyandotte-------------	---	---	---	---	Low	Low	High
PBF:							
Pineville--------------	---	---	---	---	Moderate	Low	High
Berks------------------	Paralithic bedrock	28-32	---	Moderately cemented	Low	Low	High
PnE:							
Pineville--------------	---	---	---	---	Moderate	Low	High
Lily-------------------	Lithic bedrock	31-35	---	Strongly cemented	---	Moderate	High
SbB:							
Sensabaugh-------------	---	---	---	---	---	Low	Low
SeB:							
Sensabaugh-------------	---	---	---	---	---	Low	Low
Lobdell----------------	---	---	---	---	High	Low	Moderate

Table 19.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
Ua:							
Udorthents	---	---	---	---	---	---	---
Ub:							
Udorthents	---	---	---	---	---	---	---
UcB:							
Udorthents	---	---	---	---	---	---	---
Urban land	---	---	---	---	---	---	---
Ud:							
Urban land	---	---	---	---	---	---	---
Chavies	---	---	---	---	---	Low	Moderate
Uf:							
Urban land	---	---	---	---	---	---	---
Chavies	---	---	---	---	---	Low	Moderate
UkB:							
Urban land	---	---	---	---	None	---	---
Kanawha	---	---	---	---	Moderate	Low	Moderate
UnB:							
Urban land	---	---	---	---	None	---	---
Kanawha	---	---	---	---	Moderate	Low	Moderate
UtB:							
Urban land	---	---	---	---	None	---	---
Kanawha	---	---	---	---	Moderate	Low	Moderate
Cotaco	---	---	---	---	None	Moderate	High
Ye:							
Yeager	---	---	---	---	None	Low	High

Table 20.--Physical Analysis of Selected Soils

(Analysis performed by the Soil Survey Laboratory, Natural Resources Conservation Service, USDA, Lincoln, Nebraska.)

Soil name, report number, horizon, and depth in inches	Total sand (2-0.05 mm)	Total silt (0.05-0.002 mm)	Total clay (<0.002 mm)	Sand (size class and particle diameter of <2 mm fraction): Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Textural class*	Rock fragments (particle size): 2-5 mm	5-20 mm	20-75 mm	0.1-75 mm	>2 mm (wt pct of whole soil)
	Wt pct <2 mm									Wt pct of <75 mm				
Guyandotte														
(S86WV-045-002)														
A1---- 0 to 8	42.9	38.6	18.5	2.8	8.2	15.8	10.9	5.2	chvl	1	15	36	70	52
A2---- 8 to 13	49.0	34.8	16.2	2.8	8.1	19.0	14.5	4.6	chvl	2	26	40	82	68
BA---- 13 to 19	44.6	39.8	15.6	3.6	7.4	16.0	11.9	5.7	chvl	2	16	42	76	60
Bw1--- 19 to 34	40.6	43.9	15.5	3.0	6.5	13.9	12.2	5.0	chvl	2	13	41	72	70
Bw2--- 34 to 47	51.3	36.3	12.4	3.1	7.9	17.3	16.0	7.0	chvl	2	16	49	82	69
BC---- 47 to 66	56.1	33.2	10.7	4.7	9.5	20.2	15.5	6.2	chxsl	2	17	61	90	81
Matewan														
(S86WV-045-003)														
A----- 0 to 2	67.8	22.7	9.5	0.8	3.9	21.5	33.1	8.5	chvfsl	2	11	38	80	64
BA---- 2 to 11	64.4	23.3	12.3	1.2	4.4	22.0	30.1	6.7	chvfsl	2	12	38	80	60
Bw1--- 11 to 17	64.4	24.3	11.3	3.0	6.7	21.4	26.5	6.8	chvsl	4	15	33	80	60
Bw2--- 17 to 28	63.0	25.1	11.9	4.5	8.6	21.1	23.4	5.4	chvsl	4	14	38	81	69
BC---- 28 to 36	64.2	22.4	13.4	6.5	10.7	20.6	21.4	5.0	chxsl	4	24	46	89	79
Matewan														
(S86WV-059-003)														
A----- 0 to 3	66.3	24.1	9.6	3.2	6.9	20.0	27.8	8.4	chvsl	3	12	43	82	64
BA---- 3 to 8	66.3	24.8	8.9	3.5	7.1	20.0	27.6	8.1	chvsl	1	5	33	75	61
Bw---- 8 to 23	66.8	25.5	7.7	2.5	7.1	21.2	26.9	9.1	chvsl	2	6	39	78	60
Matewan														
(S86WV-059-005)														
A----- 0 to 3	74.3	17.3	8.4	1.7	5.8	21.1	36.8	8.8	chvfsl	2	5	32	79	49
BA---- 3 to 7	72.4	19.1	8.5	1.1	3.5	21.2	36.1	10.5	chfsl	2	6	13	70	38
Bw1--- 7 to 17	71.3	19.2	9.5	2.0	3.9	21.3	35.2	8.9	chvfsl	2	5	24	74	60
Bw2--- 17 to 23	72.8	17.9	9.3	1.7	7.1	22.4	30.0	11.6	chvfsl	2	4	28	74	65

* Abbreviations used in the table are chvl, which stands for very channery loam; chxsl, extremely channery sandy loam; chvfsl, very channery fine sandy loam; chvsl, very channery sandy loam; and chfsl, channery fine sandy loam.

Table 21.--Chemical Analysis of Selected Soils

(Analysis performed by the Soil Survey Laboratory, Natural Resources Conservation Service, USDA, Lincoln, Nebraska. Absence of an entry indicates that analysis was not run; dashes indicate analysis was run, but none detected; and tr indicates not measurable by methods used.)

Soil name, report number, horizon, and depth in inches	pH H_2O 1:1	Extractable bases					Extractable acidity	Extractable aluminum	Cation exchange capacity (CEC)		Effective CEC (ECEC)	Base saturation		Aluminum saturation	Organic matter
		Ca	Mg	K	Na	Sum of bases			Sum of cations	Ammonium acetate	Bases plus aluminum	Sum of cations	Ammonium acetate		
		Milliquivalents per 100 grams of soil										Percent			
Guyandotte															
(S86WV-045-002)															
A1----- 0 to 8	5.8	15.0	2.5	0.5	--	18.0	13.4		31.4	21.5		57	84		8.24
A2----- 8 to 13	5.3	2.5	0.7	0.3	--	3.5	12.7	1.1	16.2	11.1	4.6	22	32	24	3.37
BA----- 13 to 19	5.3	1.3	0.6	0.2	--	2.1	6.9	1.3	9.0	7.1	3.4	23	30	38	1.34
Bw1---- 19 to 34	5.2	1.2	0.8	0.1	--	2.1	7.0	1.7	9.1	7.6	3.8	23	28	45	1.34
Bw2---- 34 to 47	5.2	1.0	1.0	0.1	--	2.1	6.5	1.6	8.6	7.2	3.7	24	29	43	1.48
BC----- 47 to 66	5.1	0.6	0.6	0.1	--	1.3	6.1	1.8	7.4	5.7	3.1	18	23	58	1.26
Matewan															
(S86WV-045-003)															
A------ 0 to 2	3.9	10.7	0.1	0.2	--	1.0	16.1	4.0	17.1	13.0	5.0	6	8	80	8.19
BA----- 2 to 11	4.5	0.3	tr	0.1	--	0.4	5.8	2.3	6.2	5.2	2.7	6	8	85	1.81
Bw1---- 11 to 17	4.6	0.2	tr	0.1	0.1	0.4	4.9	2.2	5.3	4.8	2.6	8	8	85	1.00
Bw2---- 17 to 28	4.5	0.1	tr	0.1	--	0.3	4.8	2.5	5.0	4.9	2.7	4	4	93	0.60
BC----- 28 to 36	4.4	0.1	0.1	0.1	--	0.3	5.7	3.0	6.0	5.6	3.3	5	5	91	0.67
Matewan															
(S86WV-059-003)															
A------ 0 to 3	4.8	8.2	1.1	0.2	--	9.5	9.5	0.2	19.0	12.1	9.7	50	79	2	5.40
BA----- 3 to 8	4.3	2.0	0.5	0.2	--	2.7	6.7	1.5	9.4	6.7	4.2	29	40	36	2.18
Bw----- 8 to 23	4.5	1.2	0.5	0.1	0.1	1.9	4.3	1.1	6.2	5.0	3.0	31	38	37	0.88
Matewan															
(S86WV-059-005)															
A------ 0 to 3	4.0	0.3	0.2	0.1	--	0.6	10.9	3.0	11.5	8.0	3.6	5	8	83	4.27
BA----- 3 to 7	4.2	0.2	0.1	0.1	--	0.4	4.9	1.6	5.3	4.1	2.0	8	10	80	1.60
Bw1---- 7 to 17	4.9	0.1	0.1	0.1	--	0.3	3.5	1.1	3.8	3.6	1.4	8	8	79	1.15
Bw2---- 17 to 23	4.8	tr	0.2	0.1	--	0.3	3.2	1.1	3.5	3.3	1.4	9	9	79	0.55

Table 22.--Taxonomic Classification of the Soils

Soil name	Family or higher taxonomic class
Allegheny	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Berks	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Cedarcreek	Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents
Chavies	Coarse-loamy, mixed, active, mesic Ultic Hapludalfs
Cloverlick	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Cotaco	Fine-loamy, mixed, semiactive, mesic Aquic Hapludults
Craigsville	Loamy-skeletal, mixed, superactive, mesic Fluventic Dystrudepts
Fiveblock	Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents
Gilpin	Fine-loamy, mixed, active, mesic Typic Hapludults
Grigsby	Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts
Guyandotte	Loamy-skeletal, mixed, active, mesic Humic Dystrudepts
Highsplint	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Itmann	Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents
Kanawha	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Kaymine	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents
Latham	Fine, mixed, semiactive, mesic Aquic Hapludults
Lily	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Lobdell	Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts
Matewan	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Pineville	Fine-loamy, mixed, active, mesic Typic Hapludults
Sensabaugh	Fine-loamy, mixed, semiactive, mesic Dystric Fluventic Eutrudepts
Shelocta	Fine-loamy, mixed, active, mesic Typic Hapludults
Udorthents	Udorthents
Yeager	Sandy, mixed, mesic Typic Udifluvents

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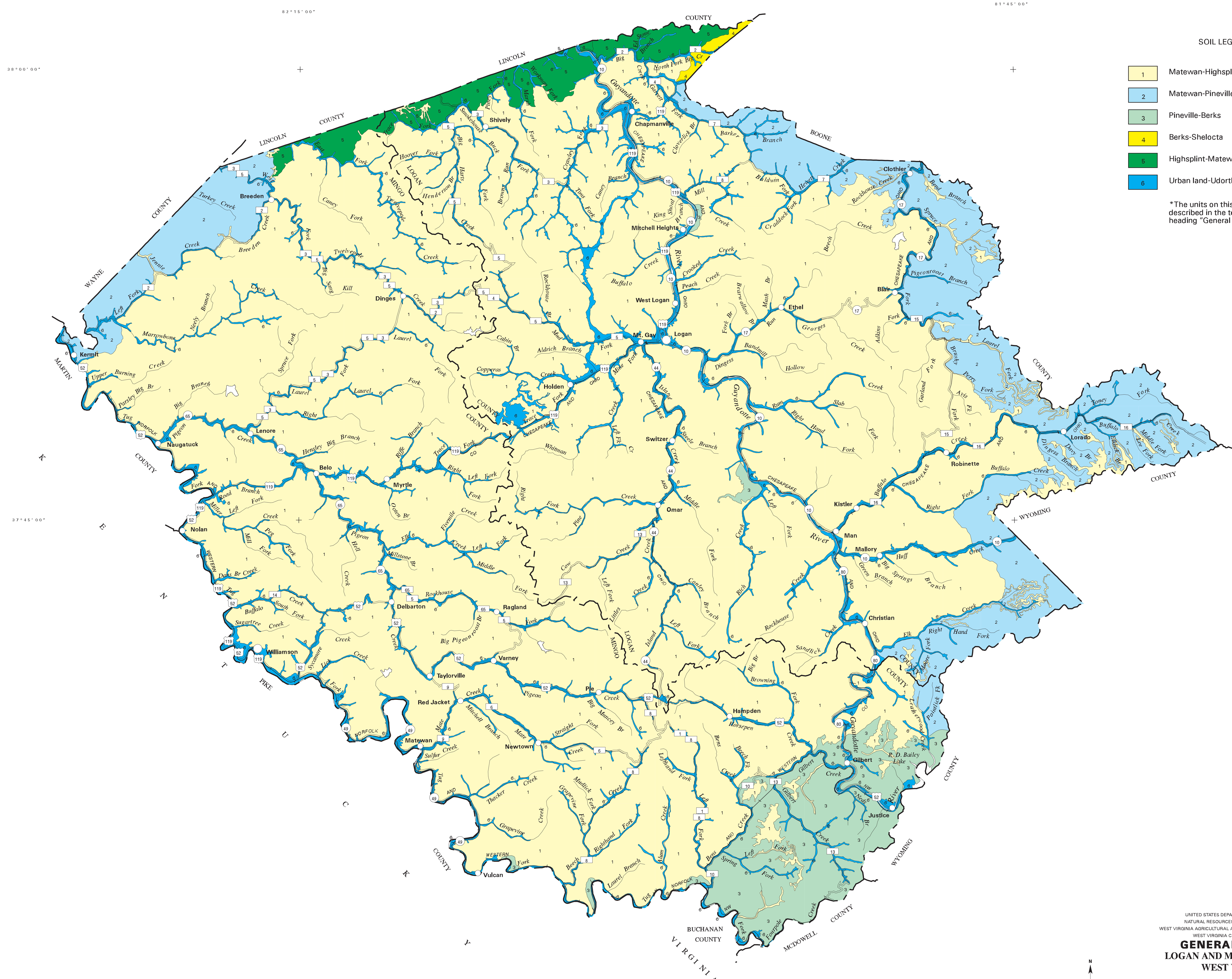


SOIL LEGEND*

1	Matewan-Highsplint-Guyandotte
2	Matewan-Pineville-Guyandotte
3	Pineville-Berks
4	Berks-Shelocta
5	Highsplint-Matewan-Cloverlick
6	Urban land-Udorthents-Craigsville

*The units on this legend are described in the text under the heading "General Soil Map Units."

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
WEST VIRGINIA AGRICULTURAL AND FORESTRY EXPERIMENT STATION
WEST VIRGINIA CONSERVATION AGENCY

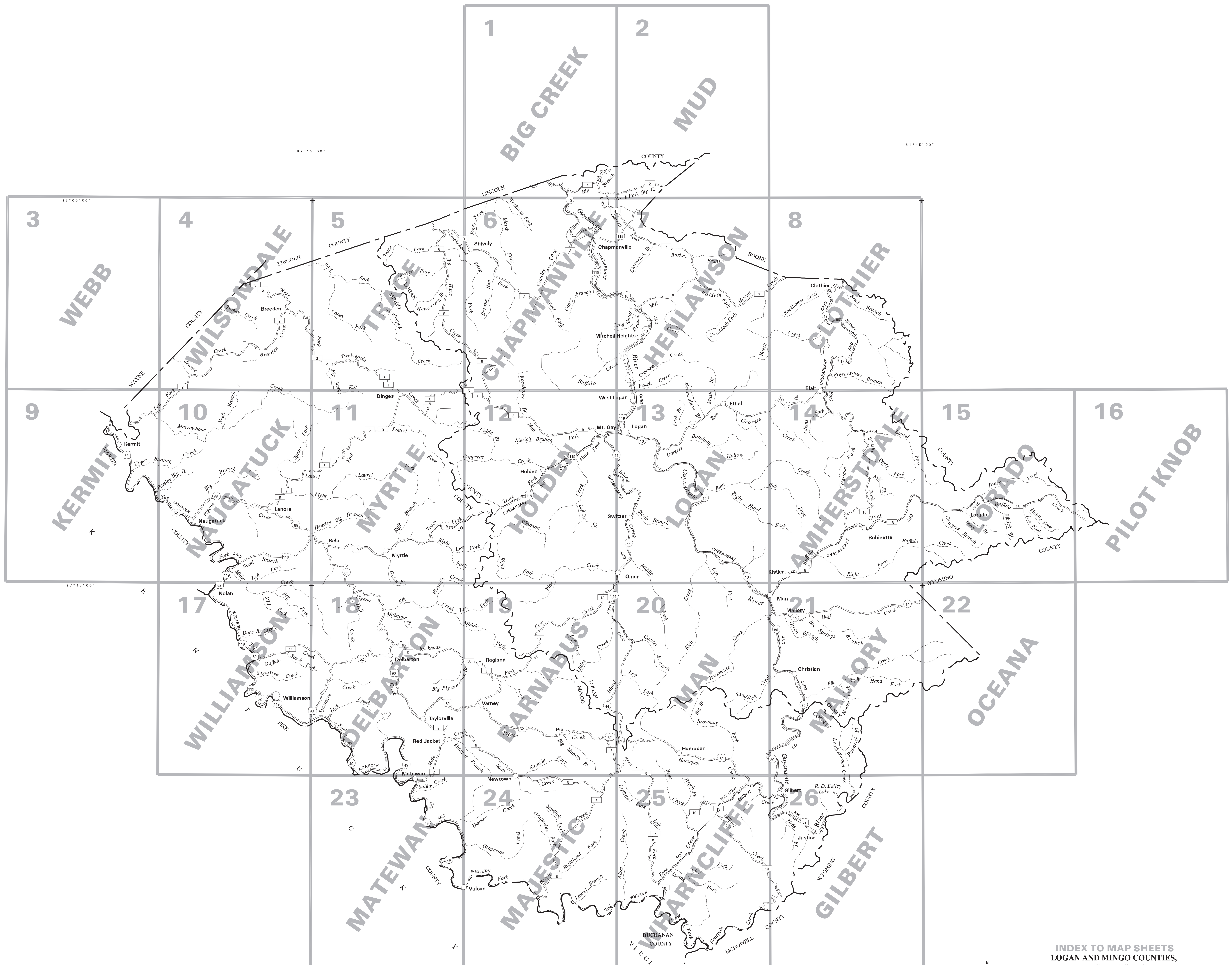
GENERAL SOIL MAP
LOGAN AND MINGO COUNTIES, WEST VIRGINIA

MILES

KILOMETERS

SCALE = 1:140000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



INDEX TO MAP SHEETS
LOGAN AND MINGO COUNTIES,
WEST VIRGINIA

MILES

KILOMETERS

SCALE = 1:140000

SOIL LEGEND

SYMBOL	NAME
AbB	Allegheny loam, 3 to 8 percent slopes
BrG	Berks-Rock outcrop complex, extremely steep, extremely stony
BSF	Berks-Shelocta association, very steep, extremely stony
Ch	Chavies fine sandy loam
Ck	Chavies fine sandy loam, protected
Cr	Craigsville very gravelly sandy loam
FkC	Fiveblock and Kaymine soils, 0 to 15 percent slopes, extremely stony
FkF	Fiveblock and Kaymine soils, 35 to 80 percent slopes, extremely stony
GmE	Gilpin-Matewan complex, 25 to 35 percent slopes, very stony
Gw	Grigsby loam
HgE	Highsplint channery loam, 15 to 35 percent slopes, very stony
HMF	Highsplint-Matewan-Cloverlick association, very steep, extremely stony
HuE	Highsplint-Urban land complex, 15 to 35 percent slopes, very stony
ImF	Itmann extremely channery sandy loam, very steep
KcF	Kaymine-Cedarcreek-Matewan complex, very steep, extremely stony
KfB	Kaymine and Fiveblock soils, 0 to 8 percent slopes, extremely stony
KfF	Kaymine and Fiveblock soils, 35 to 65 percent slopes, extremely stony
KrF	Kaymine-Rock outcrop complex, very steep, extremely stony
LmE	Lily-Matewan complex, 15 to 35 percent slopes, very stony
MHF	Matewan-Highsplint-Guyandotte association, very steep, extremely stony
MnE	Matewan-Latham complex, 25 to 35 percent slopes
MPF	Matewan-Pineville-Guyandotte association, very steep, extremely stony
PBF	Pineville-Berks association, very steep, extremely stony
PnE	Pineville-Lily complex, 15 to 35 percent slopes, very stony
SbB	Sensabaugh loam, 3 to 8 percent slopes
SeB	Sensabaugh-Lobdell loams, 2 to 8 percent slopes
Ua	Udorthents, earthen dam
Ub	Udorthents, smoothed
UcB	Udorthents-Urban land complex, 0 to 8 percent slopes
Ud	Urban land-Chavies complex
Uf	Urban land-Chavies complex, protected
UkB	Urban land-Kanawha complex, 0 to 8 percent slopes
UnB	Urban land-Kanawha complex, 0 to 8 percent slopes, protected
UtB	Urban land-Kanawha-Cotaco complex, 0 to 8 percent slopes
W	Water
Ye	Yeager fine sandy loam

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province
County or parish
Minor civil division
Reservation (national forest or park, state forest or park)
Land grant
Limit of soil survey (label) and/or denied access area
Field sheet matchline and neatline
Previously published survey

OTHER BOUNDARY
Airport, airfield
Cemetery
City/county park

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER (section and land grants)

GEOGRAPHIC COORDINATE TICK

TRANSPORTATION

Divided roads
Other roads
Trail

ROAD EMBLEMS AND DESIGNATIONS

Interstate 173 79 345
Federal 287 410 224
State 52 52 347
County, farm or ranch 1283

RAILROAD

POWER TRANSMISSION LINE

PIPELINE

FENCE

LEVEES

Without road
With road
With railroad
Single side slope

DAMS

Medium or small W

LANDFORM FEATURES

Prominent hill or peak

CULTURAL FEATURES

MISCELLANEOUS CULTURAL FEATURES

Farmstead, house
Church
School
Other religion Mt Carmel
Located object Ranger Station
Tank Petroleum
Lookout tower
Oil and/or natural gas wells
Windmill
Lighthouse

HYDROGRAPHIC FEATURES

STREAMS

Perennial stream, double line
Unclassified stream
Drainage end

DRAINAGE AND IRRIGATION

Double-line canal CANAL
Perennial drainage and/or irrigation ditch
Intermittent drainage and/or irrigation ditch

SMALL LAKES, PONDS, AND RESERVOIRS

Perennial water
Miscellaneous water
Flood pool line FLOOD POOL LINE

MISCELLANEOUS WATER FEATURES

Spring
Well, artesian
Well, irrigation

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS AbB SbB

LANDFORM FEATURES

Bedrock escarpment
Other than bedrock escarpment
Short steep slope
Gully
Depression, closed
Sinkhole
Borrow pit
Gravel pit
Mine or quarry
Landfill

MISCELLANEOUS SURFACE FEATURES

Blowout
Clay spot
Gravelly spot
Lava spot
Marsh or swamp
Rock outcrop (includes sandstone and shale)
Saline spot
Sandy spot
Severely eroded spot
Slide or slip
Sodic spot
Spoil area
Stony spot
Very stony spot
Wet spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
BIG CREEK QUADRANGLE
SHEET NUMBER 1 OF 26

82° 07′30″ 82° 05′00″ 82° 02′30″ 82° 00′00″
38° 07′30″ 38° 05′00″ 38° 02′30″ 38° 00′00″

Joins sheet 2, Mud
Joins sheet 5, Trace
Joins sheet 6, Chapmanville
Joins sheet 7, Henlawson

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and the West Virginia Agricultural Experiment Station.
Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1997 aerial photography. Hydrography was acquired from the U.S. Geological Survey Topographic quadrangles and from field observation. The hydrography was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

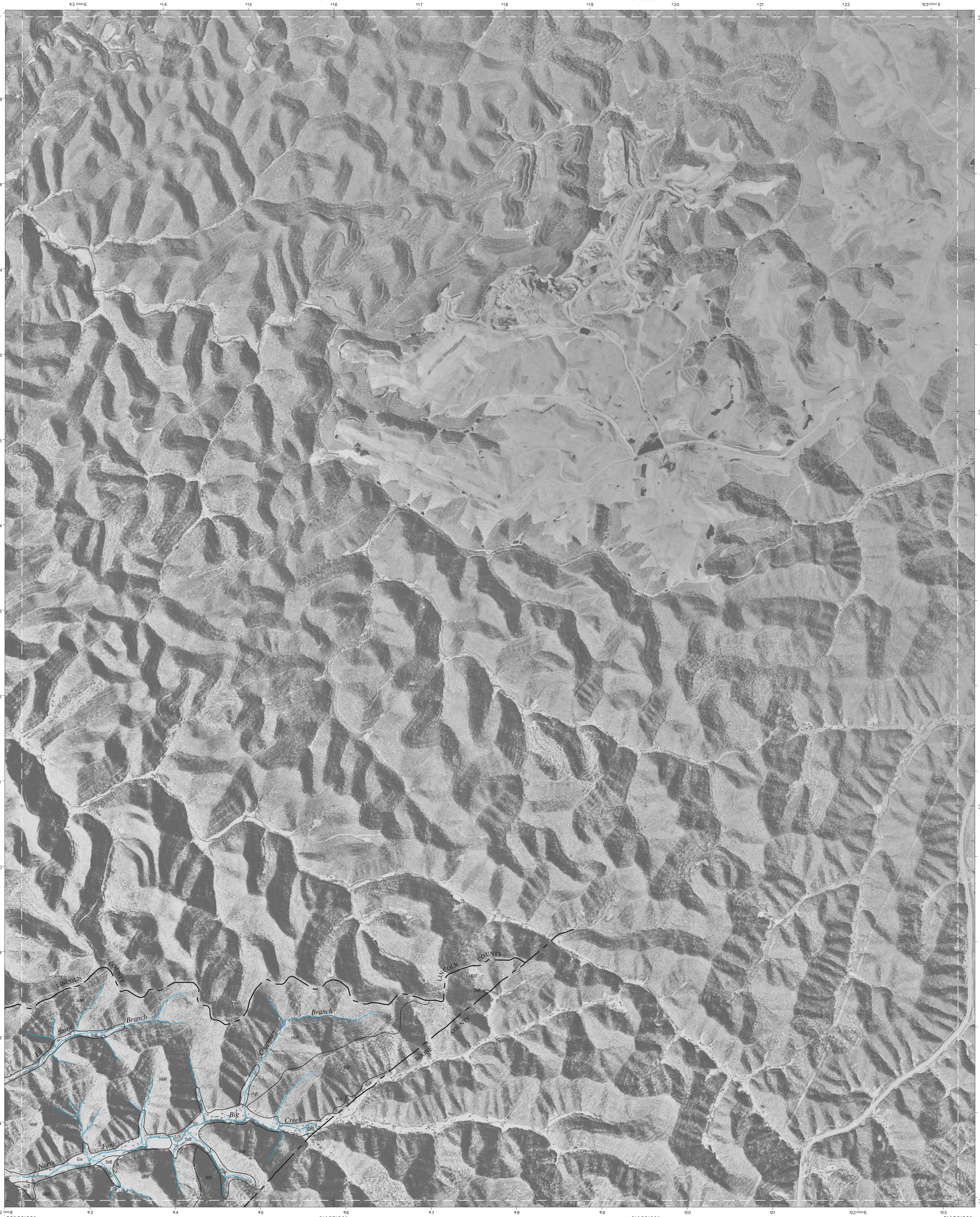
2 MUD
5 TRACE
6 CHAPMANVILLE
7 HENLAWSON

INDEX TO ADJOINING 7.5 MAPS

BIG CREEK, WEST VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 1 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid
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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

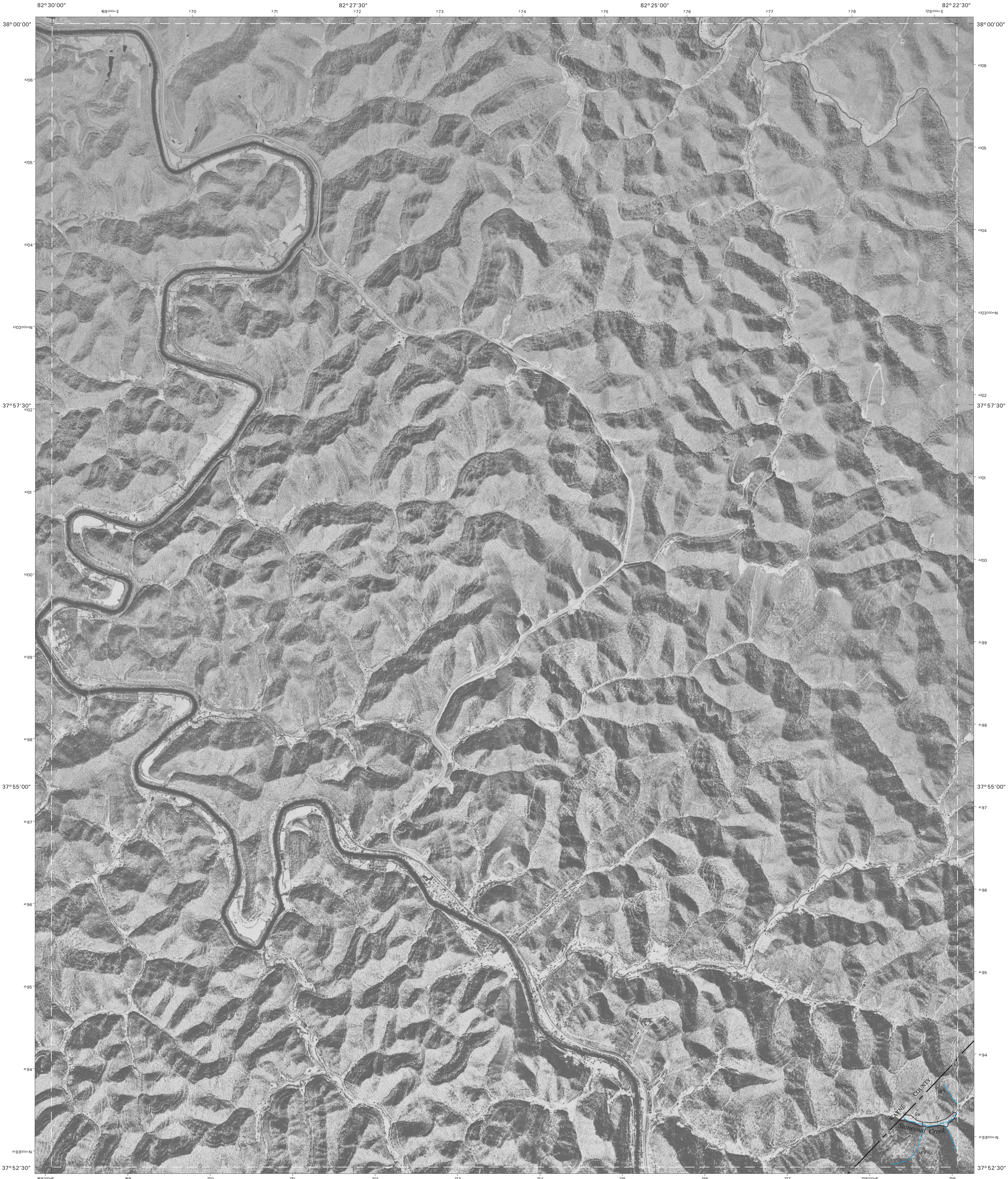
FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS
1 BIG CREEK
6 CHAPMANVILLE
7 HENLAWSON
8 CLOTHIER

MUD, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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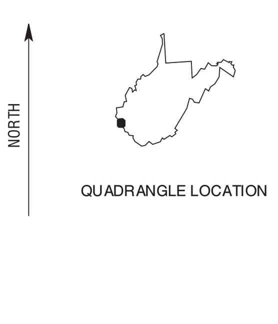
North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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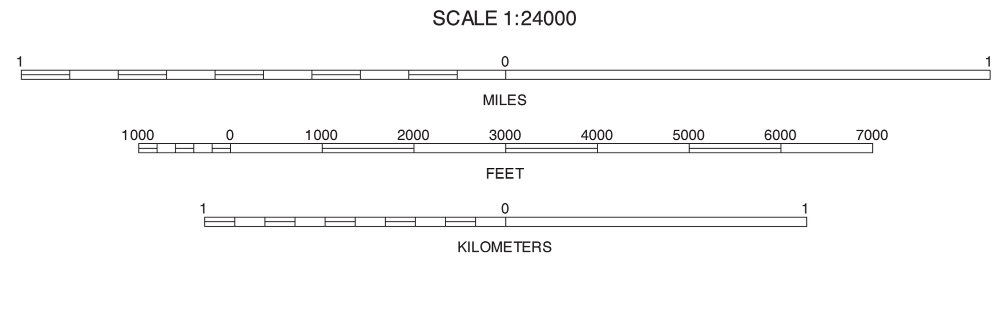

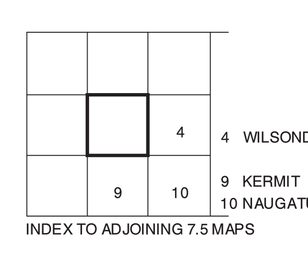

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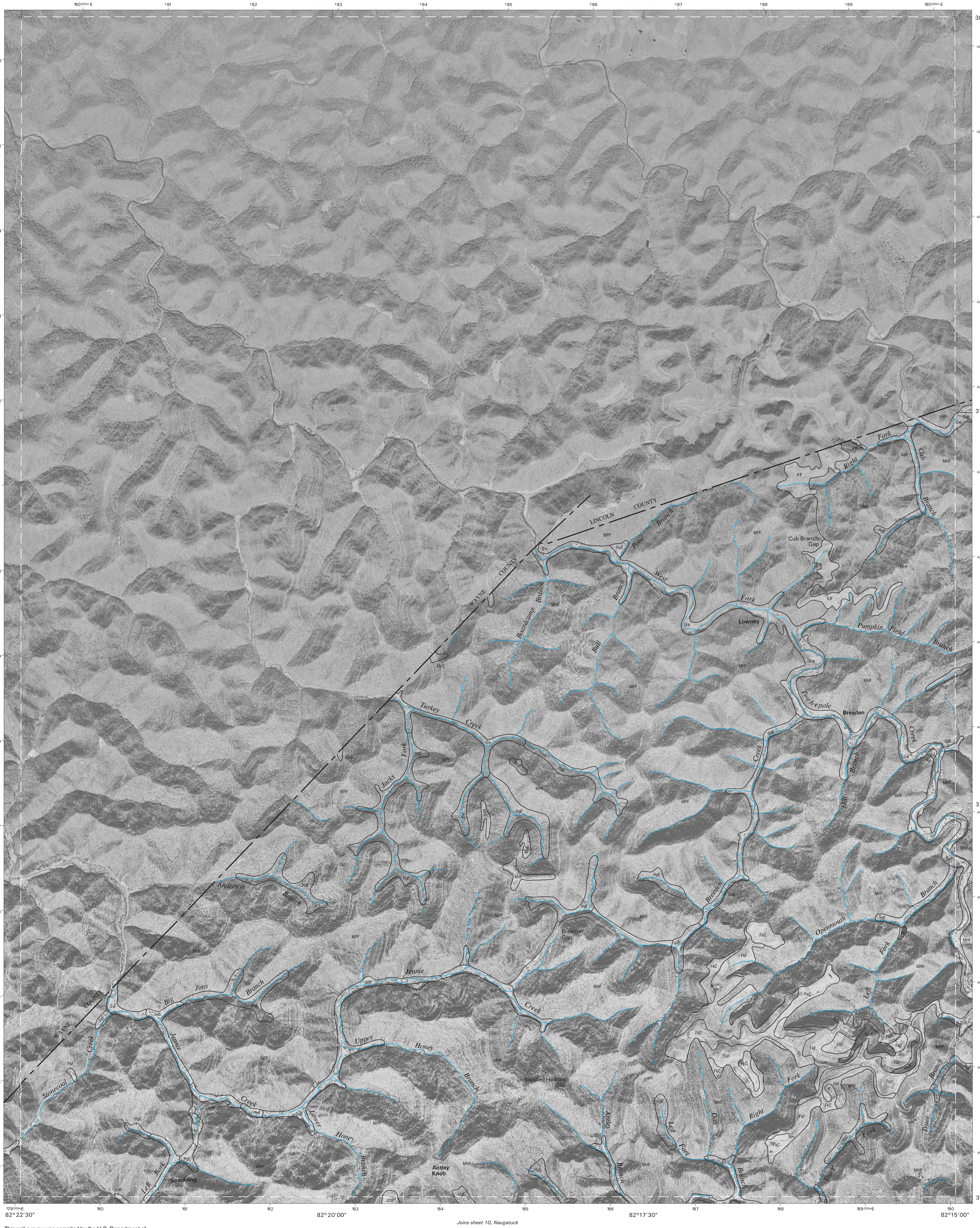
WEBB, WEST VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 3 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid
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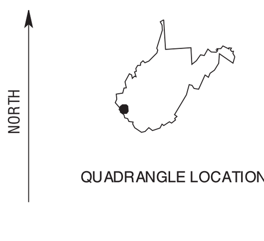
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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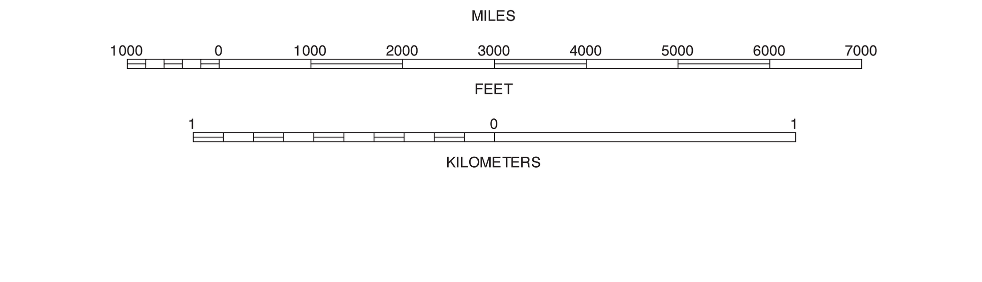
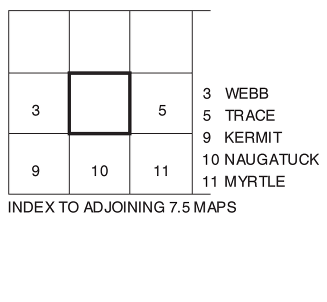




WILSONDALE, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

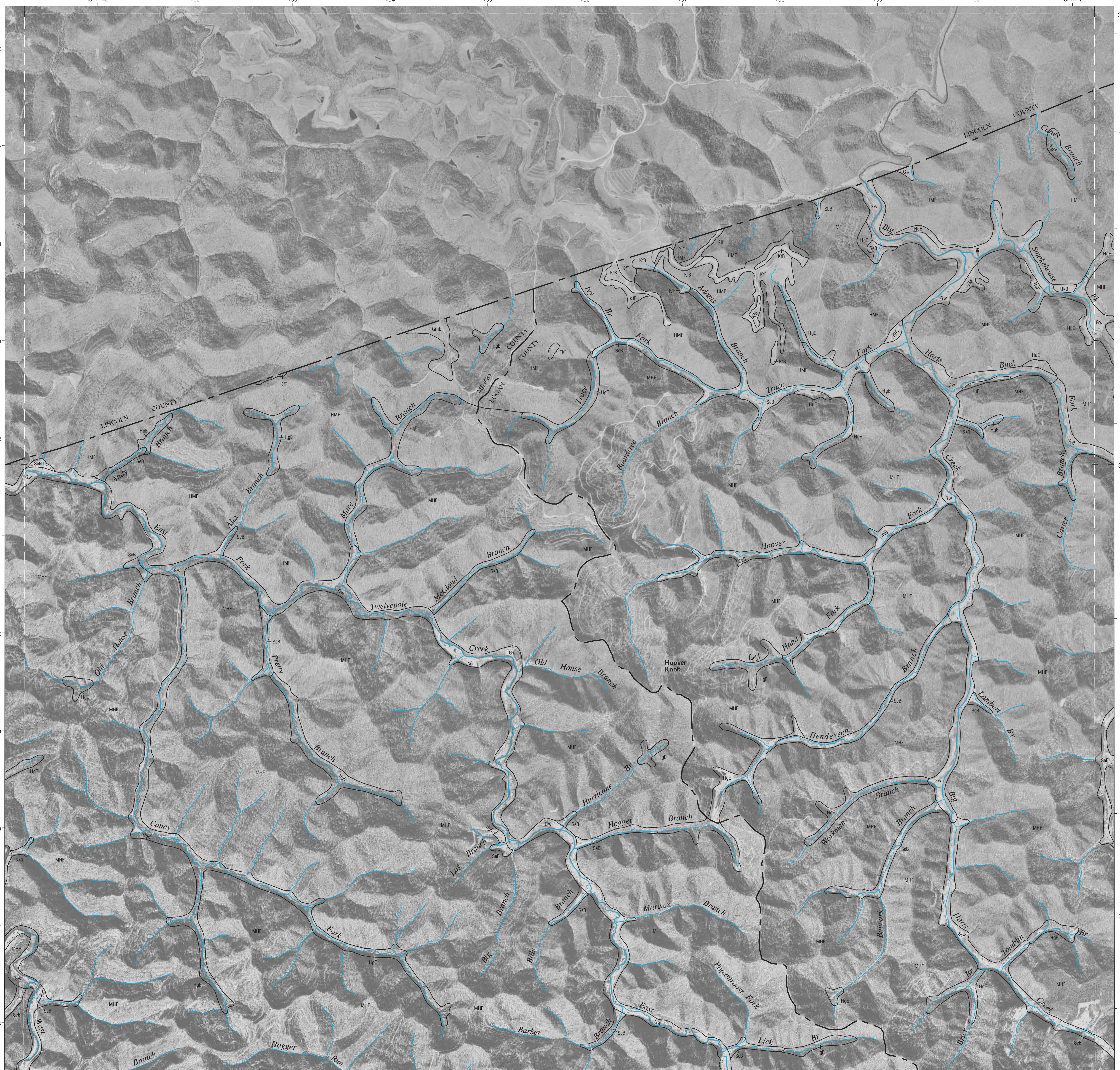
Joins sheet 1, Big Creek

82°15'00" 82°12'30" 82°10'00" 82°07'30"

38°00'00" 37°57'30" 37°55'00" 37°52'30"

Joins sheet 4, Wilsondale

Joins sheet 6, Chapmanville



Joins sheet 11, Myrtle

Joins sheet 10, Naugatuck

Joins sheet 12, Holden

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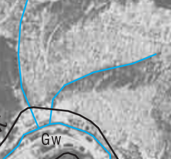
North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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1 BIG CREEK
4 WILSONDALE
6 CHAPMANVILLE
10 NAUGATUCK
11 MYRTLE
12 HOLDEN

TRACE, WEST VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 5 OF 26

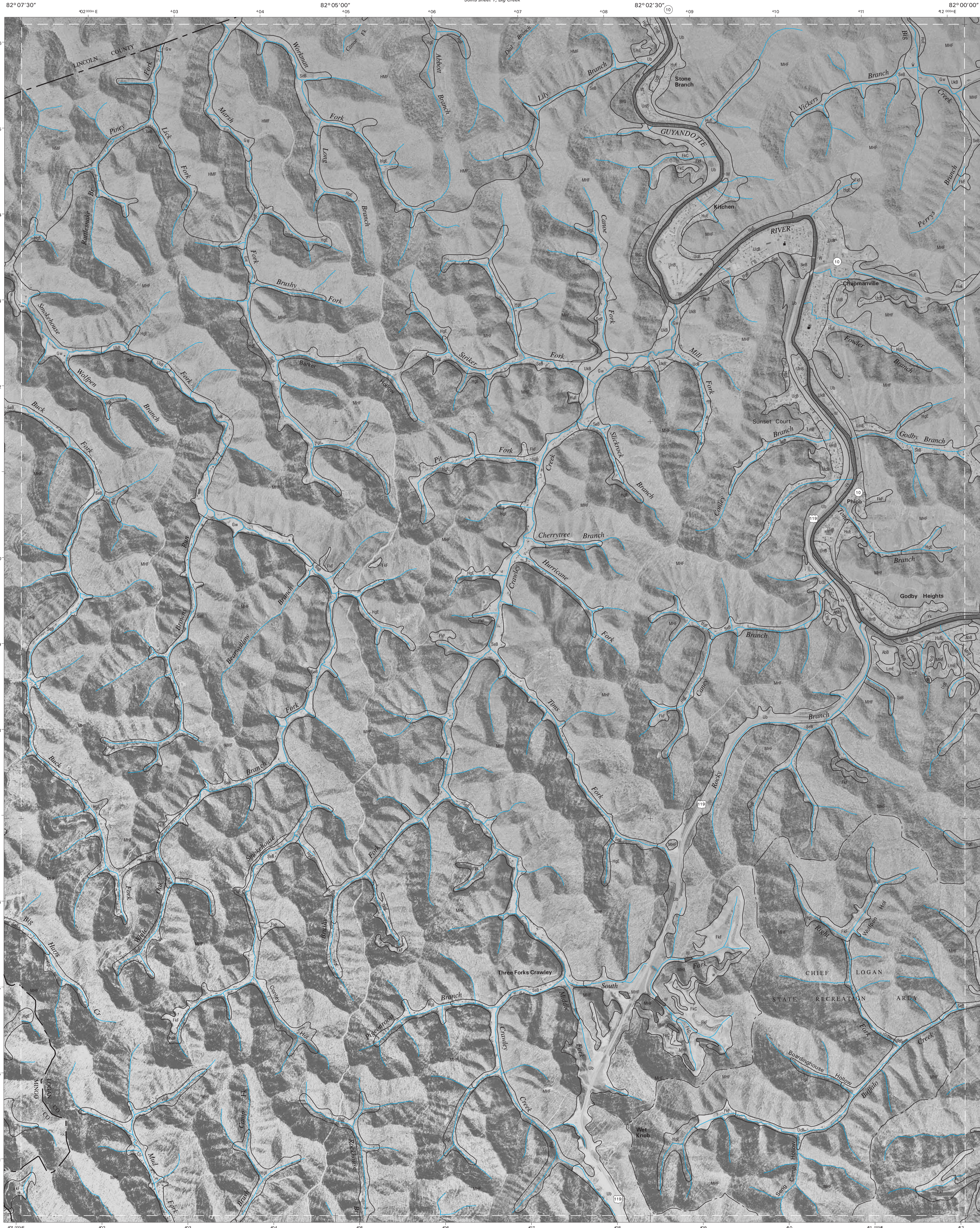
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
CHAPMANVILLE QUADRANGLE
SHEET NUMBER 6 OF 26

Joins sheet 1, Big Creek

Joins sheet 2, Mud



Joins sheet 5, Trace

Joins sheet 7, Henlawson

Joins sheet 11, Myrtle

Joins sheet 12, Holden

Joins sheet 13, Logan

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	1	2	
5		7	
11	12	13	

1 BIG CREEK
2 MUD
5 TRACE
7 HENLAWSON
11 MYRTLE
12 HOLDEN
13 LOGAN

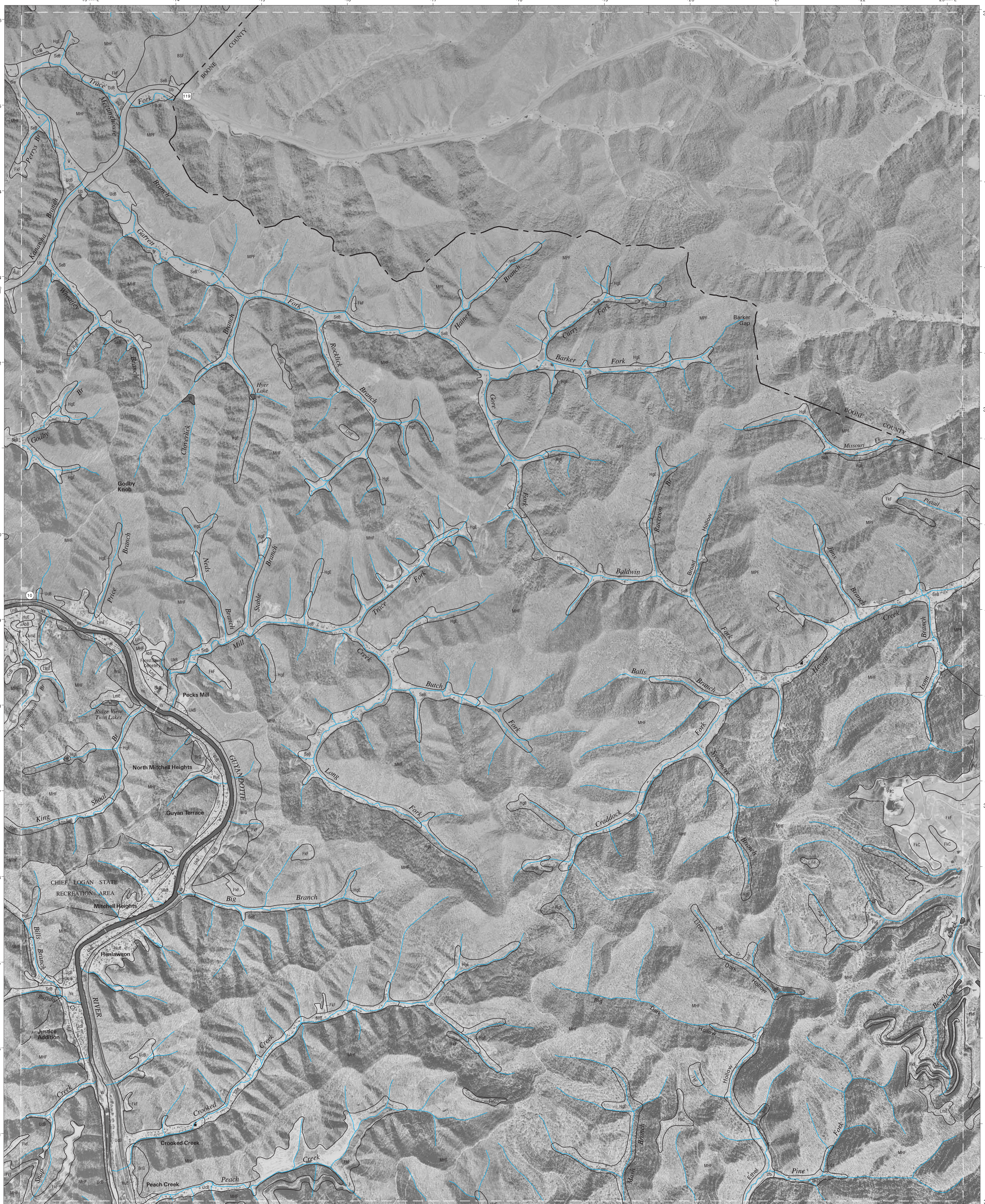
INDEX TO ADJOINING 7.5 MAPS

CHAPMANVILLE, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 1, Big Creek

Joins sheet 2, Mud



Joins sheet 6, Chapmanville

Joins sheet 8, Clothier

Joins sheet 12, Holden

Joins sheet 13, Logan

Joins sheet 14, Amherstdale

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

1	2		1 BIG CREEK 2 MUD
6		8	6 CHAPMANVILLE 8 CLOTHIER
12	13	14	12 HOLDEN 13 LOGAN 14 AMHERSTDALE

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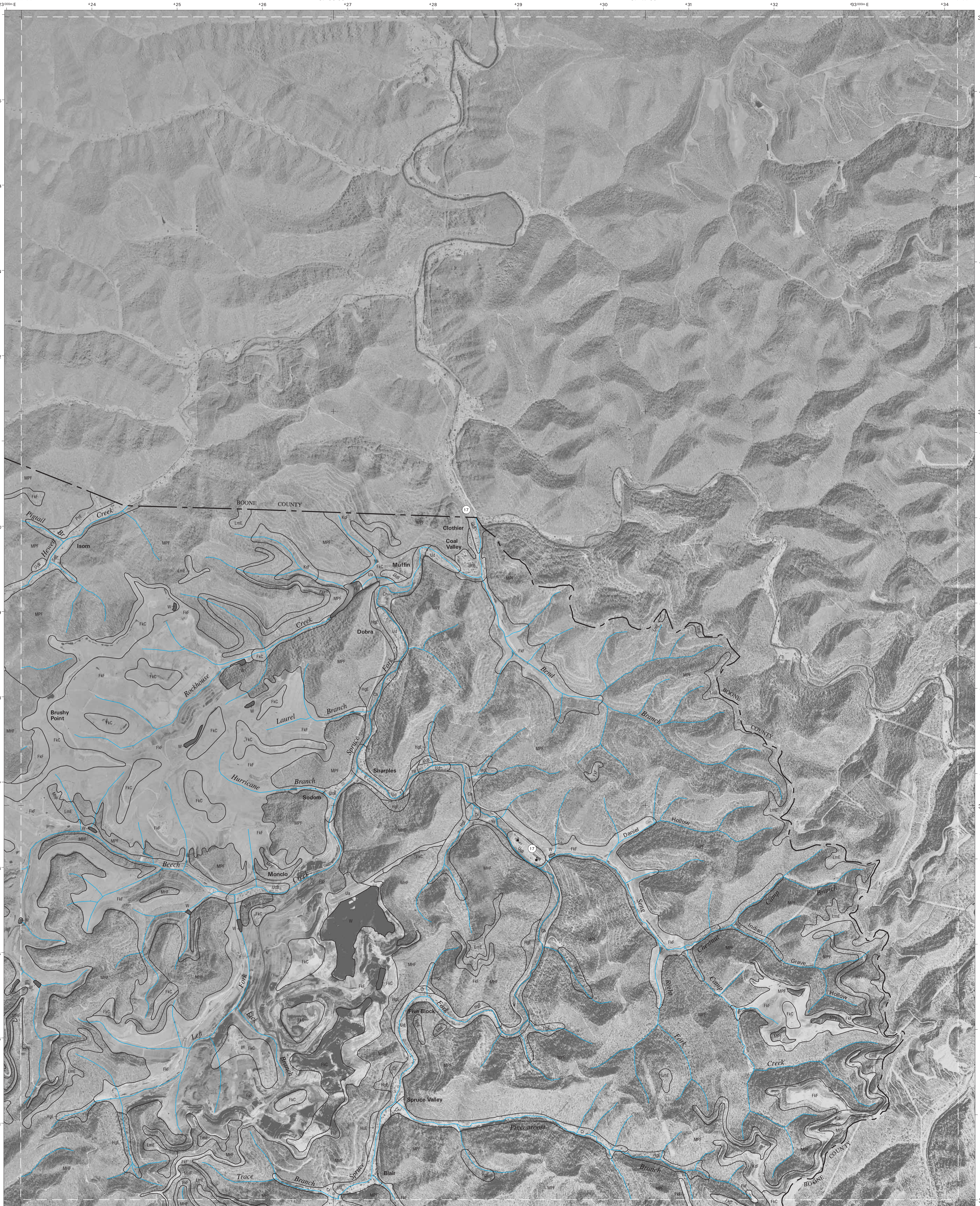
HENLAWSON, WEST VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 7 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
CLOTHIER QUADRANGLE
SHEET NUMBER 8 OF 26



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

			2 MUD
2			
7			7 HENLAWSON
13	14	15	13 LOGAN 14 AMHERSTDALE 15 LORADO

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CLOTHIER, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 26

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

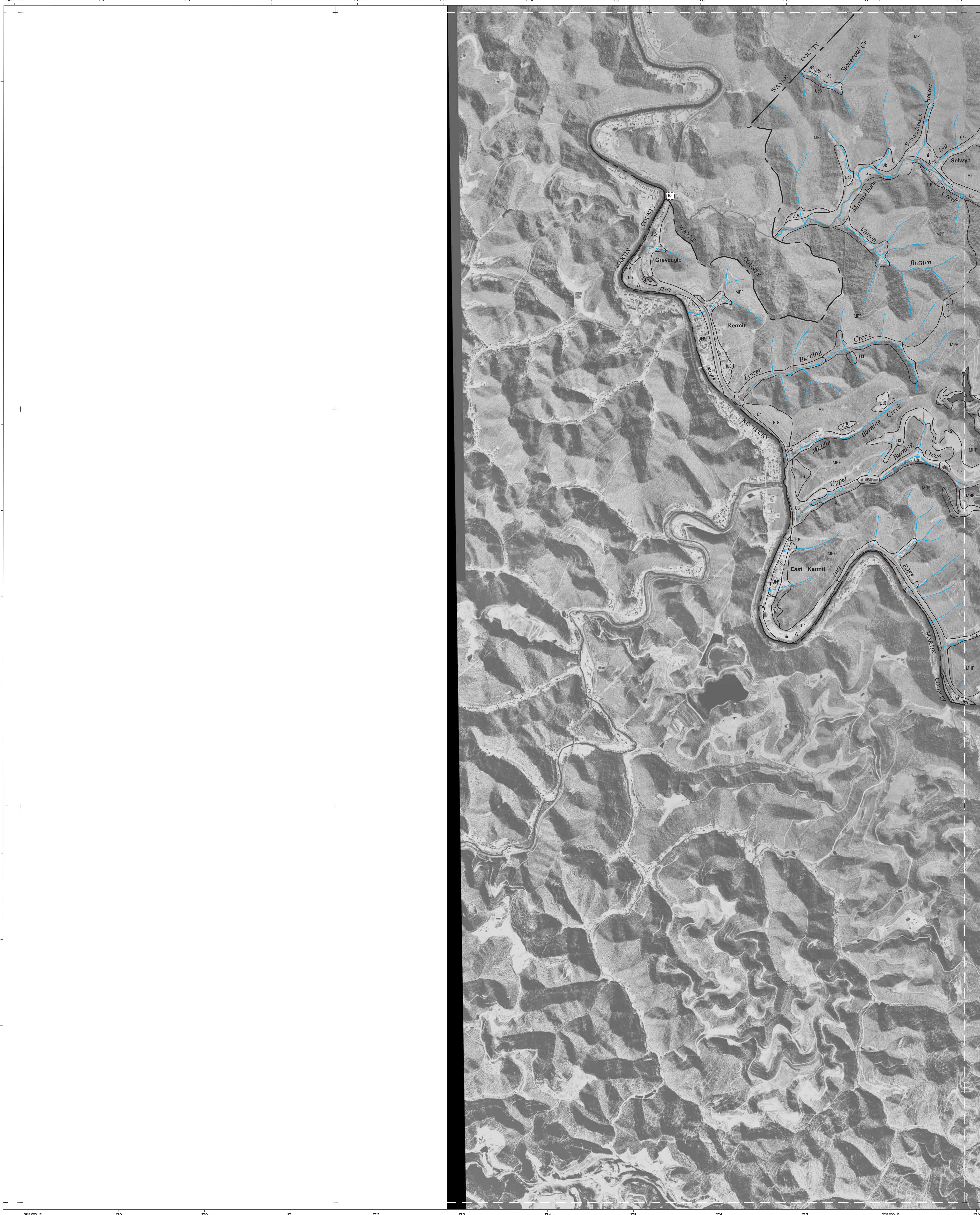
LOGAN AND MINGO COUNTIES, WEST VIRGINIA
KERMIT QUADRANGLE
SHEET NUMBER 9 OF 26

Joins sheet 3, Webb

Joins sheet 4, Wilsondale

82° 30′00″ 82° 27′30″ 82° 25′00″ 82° 22′30″

37° 52′30″



37° 50′00″

37° 47′30″

37° 45′00″

Joins sheet 10, Naugatuck

82° 30′00″ 82° 27′30″ 82° 25′00″ 82° 22′30″

Joins sheet 17, Williamson

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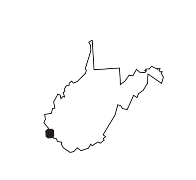
NORTH



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	3	4
		10
		17

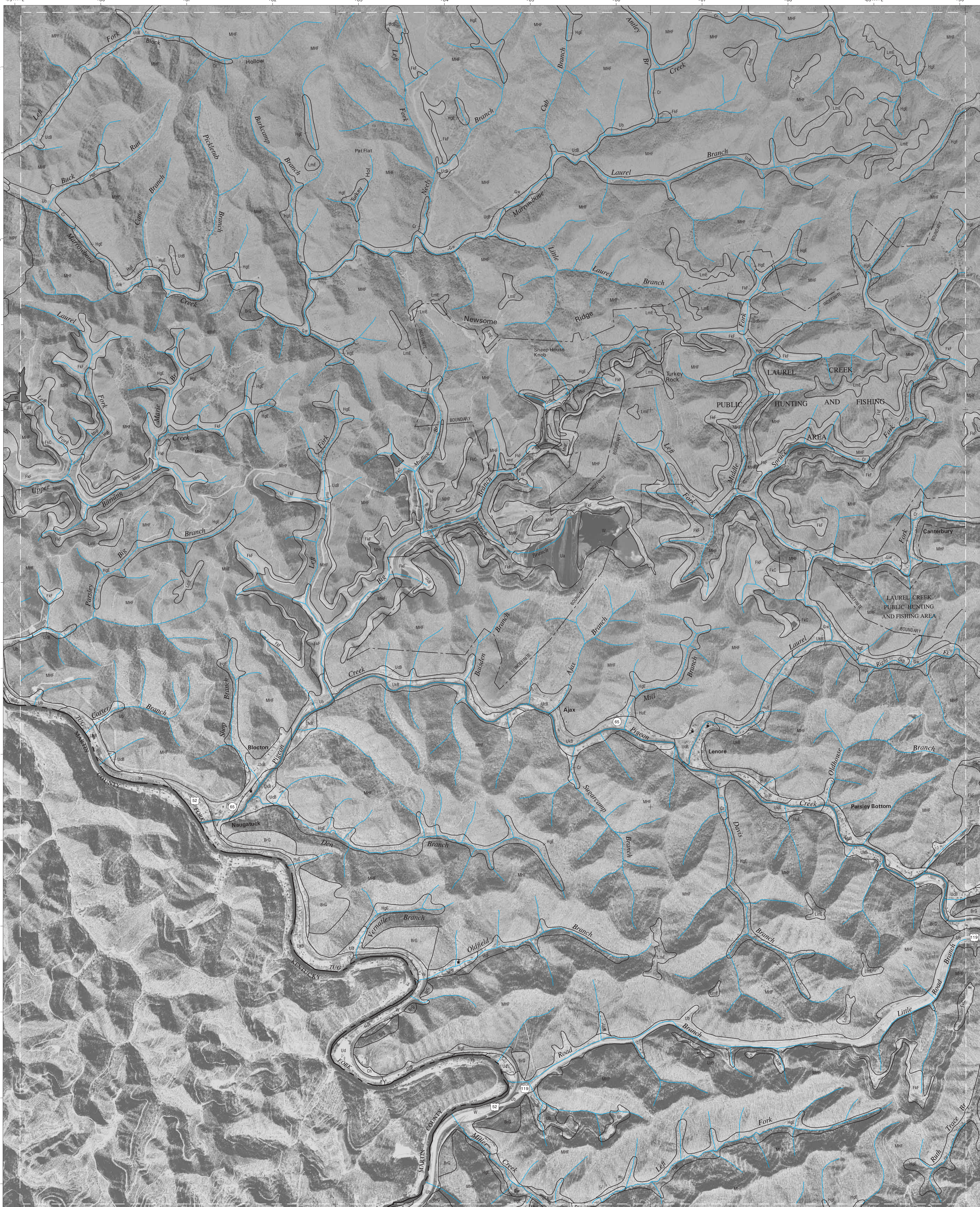
3 WEBB
4 WILSONDALE
10 NAUGATUCK
17 WILLIAMSON

INDEX TO ADJOINING 7.5 MAPS

KERMIT, WEST VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 9 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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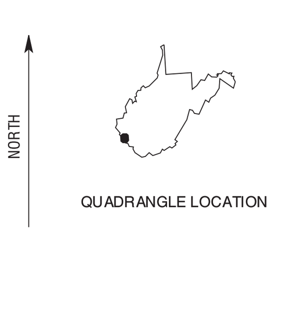

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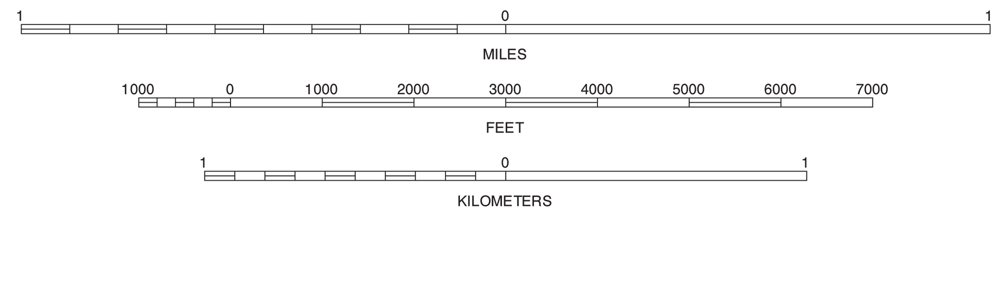


3	4	5
9		11
	17	18

3 WEBB
4 WILSONDALE
5 TRACE
9 KERMIT
11 MYRTLE
17 WILLIAMSON
18 DELBARTON

INDEX TO ADJOINING 7.5 MAPS

NAUGATUCK, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

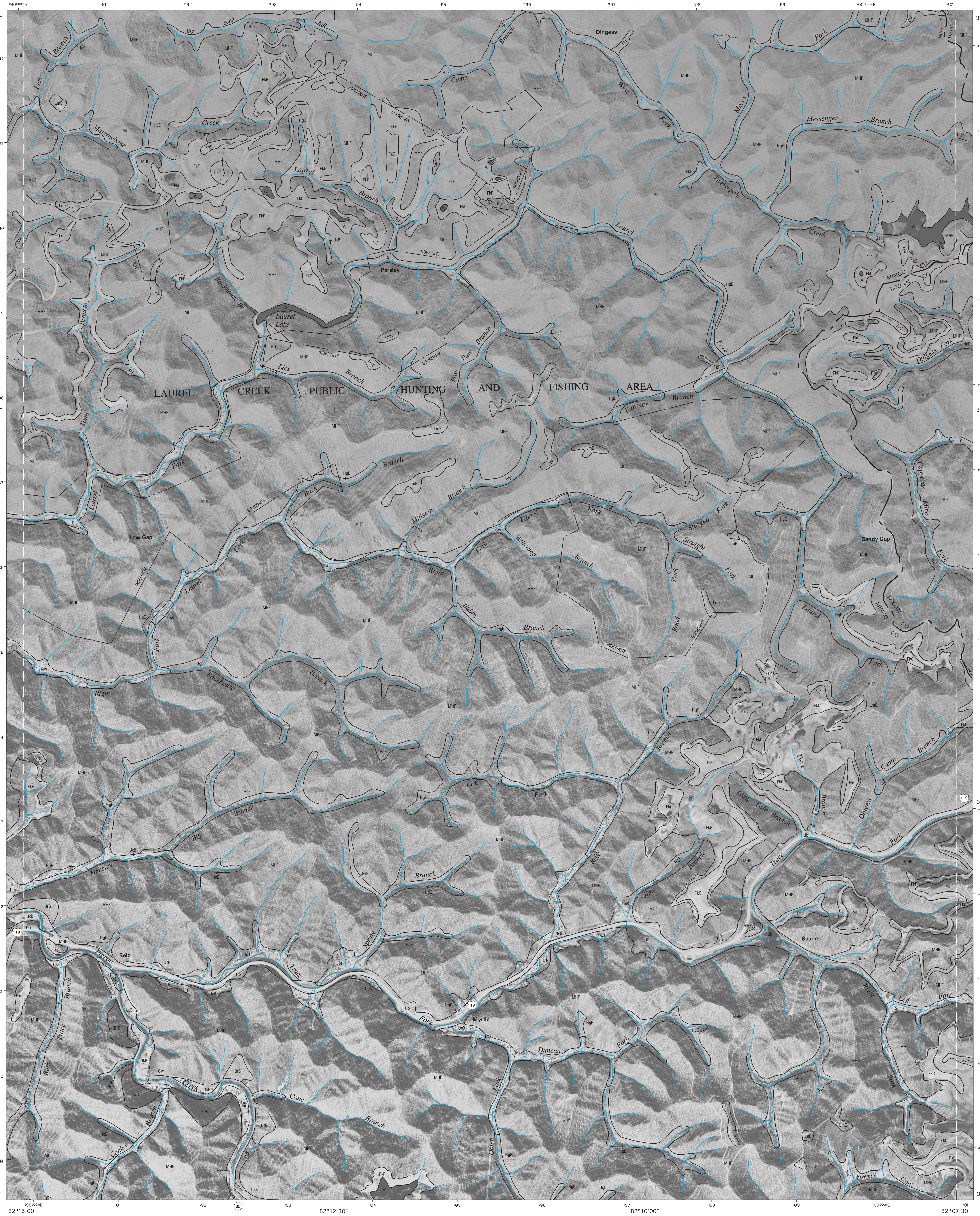
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
MYRTLE QUADRANGLE
SHEET NUMBER 11 OF 26

Joins sheet 4, Wilsondale

Joins sheet 5, Trace

Joins sheet 6, Chapmanville



Joins sheet 10, Naugatuck

Joins sheet 12, Holden

Joins sheet 17, Williamson

Joins sheet 18, Delbarton

Joins sheet 19, Barnabus

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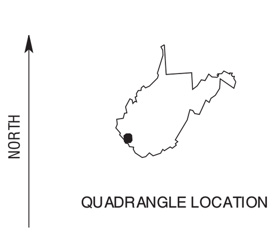

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

4	5	6
10		12
17	18	19

4 WILSONDALE
5 TRACE
6 CHAPMANVILLE
10 NAUGATUCK
12 HOLDEN
17 WILLIAMSON
18 DELBARTON
19 BARNABUS

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MYRTLE, WEST VIRGINIA
7.5 MINUTE SERIES
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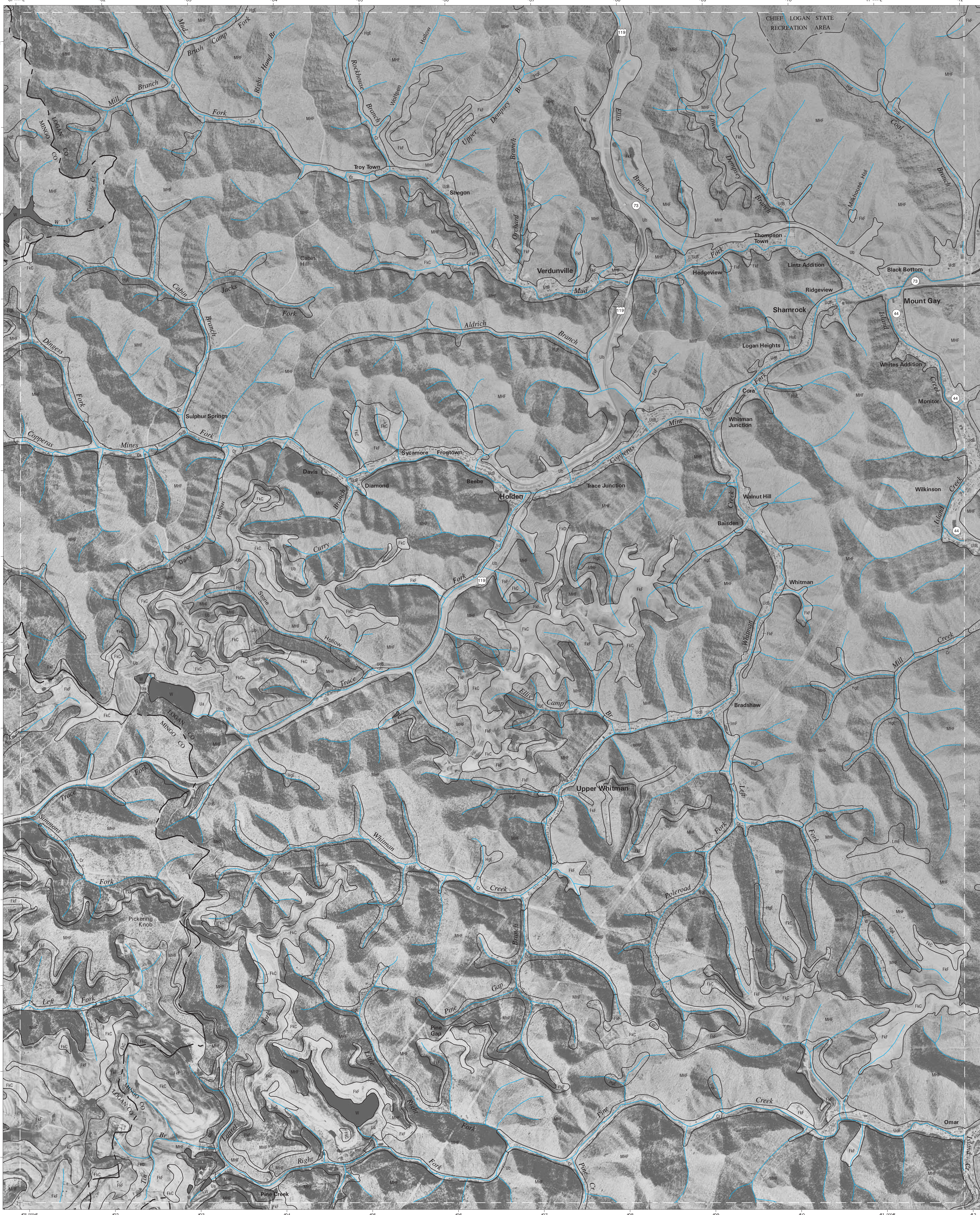
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
HOLDEN QUADRANGLE
SHEET NUMBER 12 OF 26



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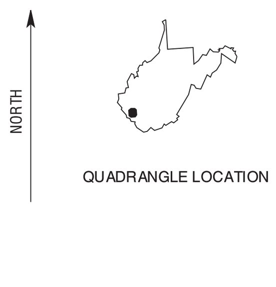

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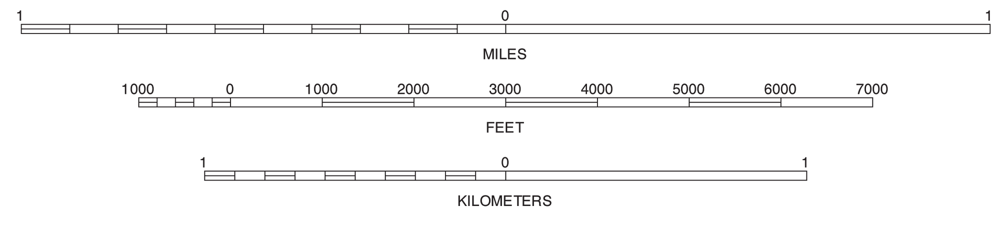

5	6	7
11		13
18	19	20

5 TRACE
6 CHAPMANVILLE
7 HENLAWSON
11 MYRTLE
13 LOGAN
18 DELBARTON
19 BARNABUS
20 MAN

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HOLDEN, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 26

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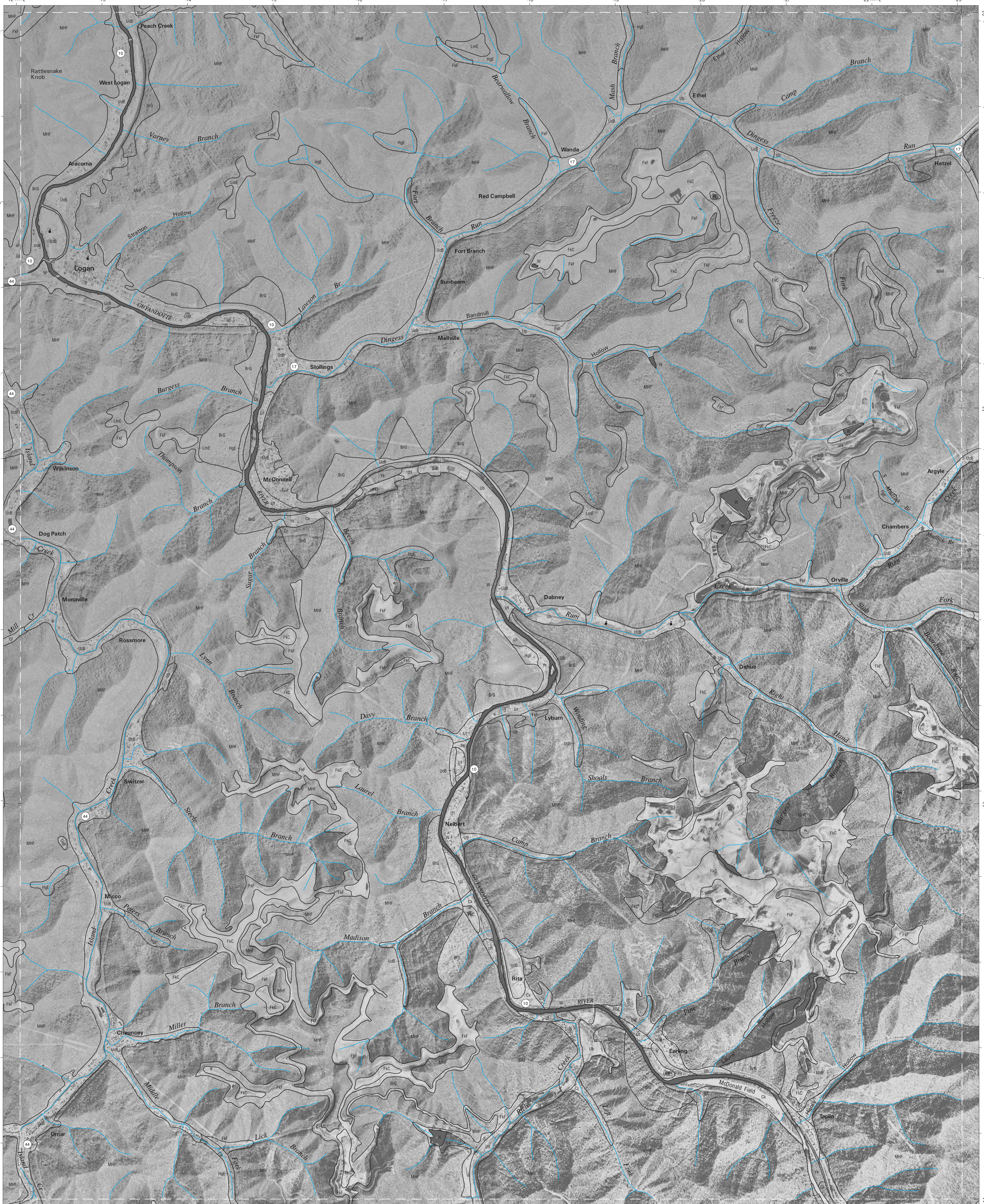

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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

6	7	8
12		14
19	20	21

6 CHAPMANVILLE
7 HENLAWSON
8 CLOTHIER
12 HOLDEN
14 AMHERSTDALE
19 BARNABUS
20 MAN
21 MALLORY

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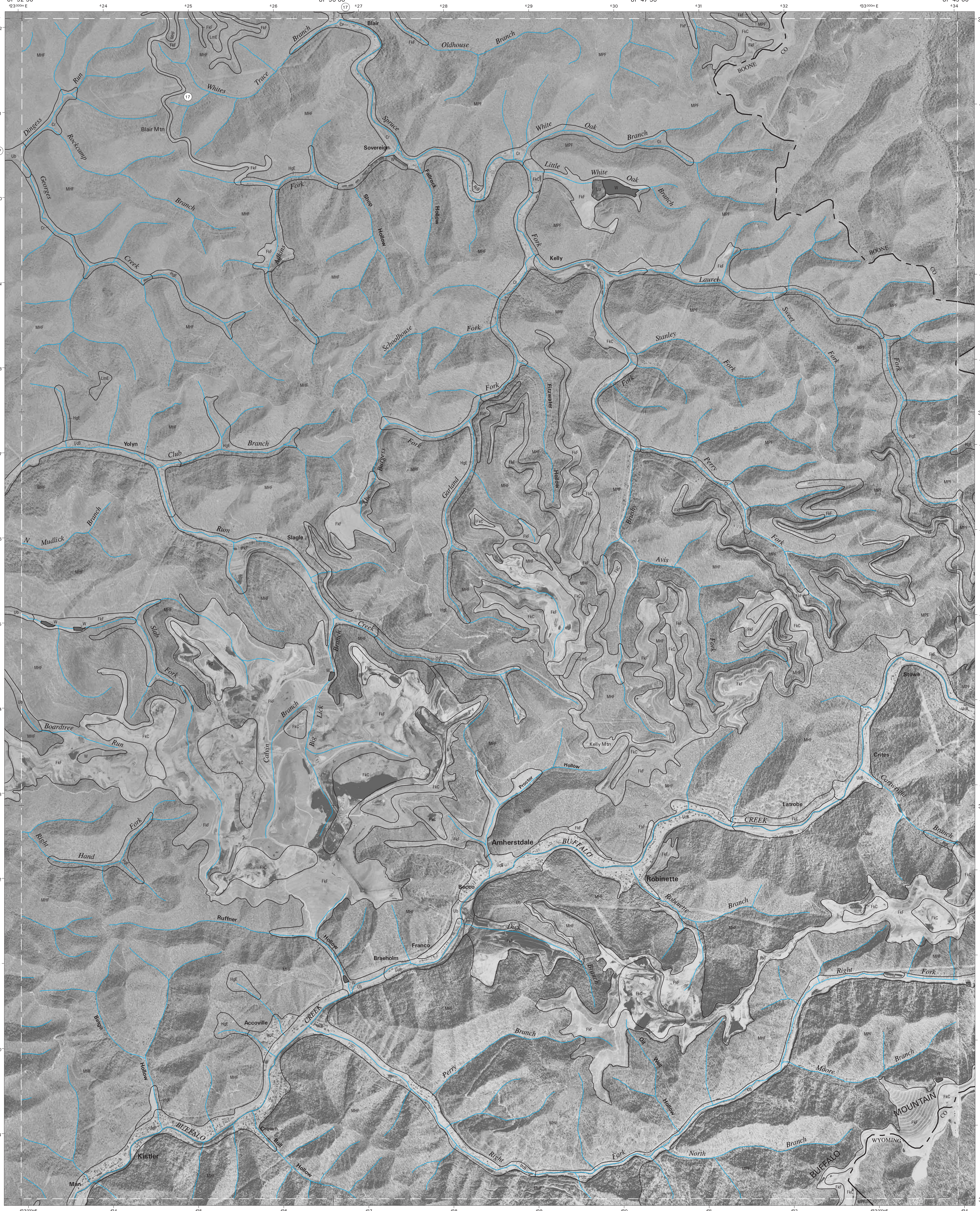
LOGAN, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

MILES — FEET — KILOMETERS

7	8	
13		15
20	21	22

7 HENLAWSON
8 CLOTHIER
13 LOGAN
15 LORADO
20 MAN
21 MALLORY
22 OCEANA

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AMHERSTDALE, WEST VIRGINIA
7.5 MINUTE SERIES
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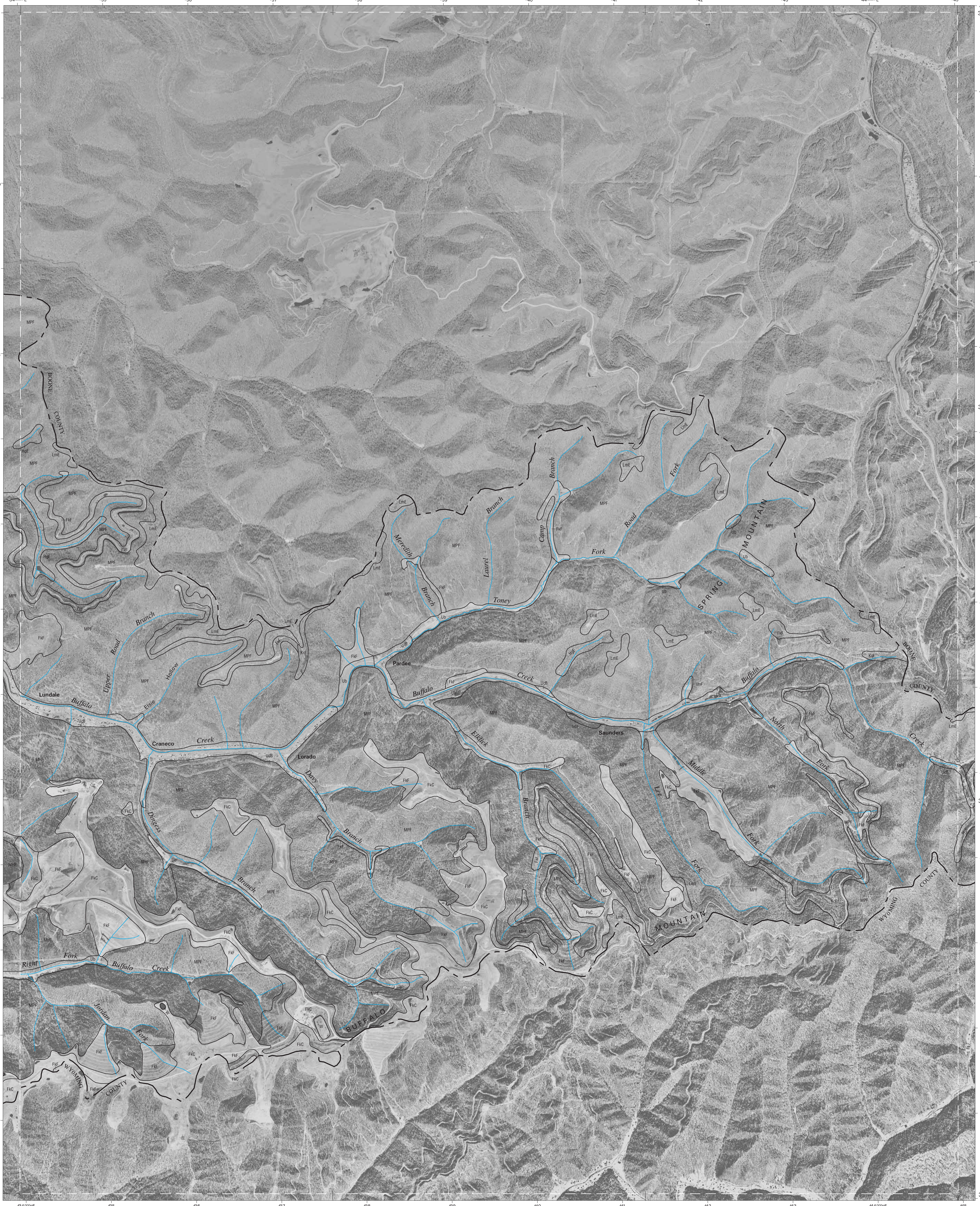
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
LORADO QUADRANGLE
SHEET NUMBER 15 OF 26

Joins sheet 8, Clothier



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North American Datum of 1983 (NAD83). GRS-80 Spheroid
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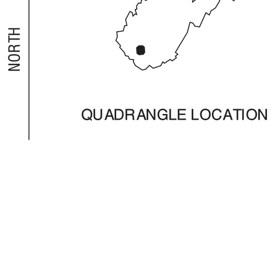

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

8			8 CLOTHIER
14		16	14 AMHERSTDALE 16 PILOT KNOB 21 MALLORY 22 OCEANA
21	22		

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LORADO, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 26

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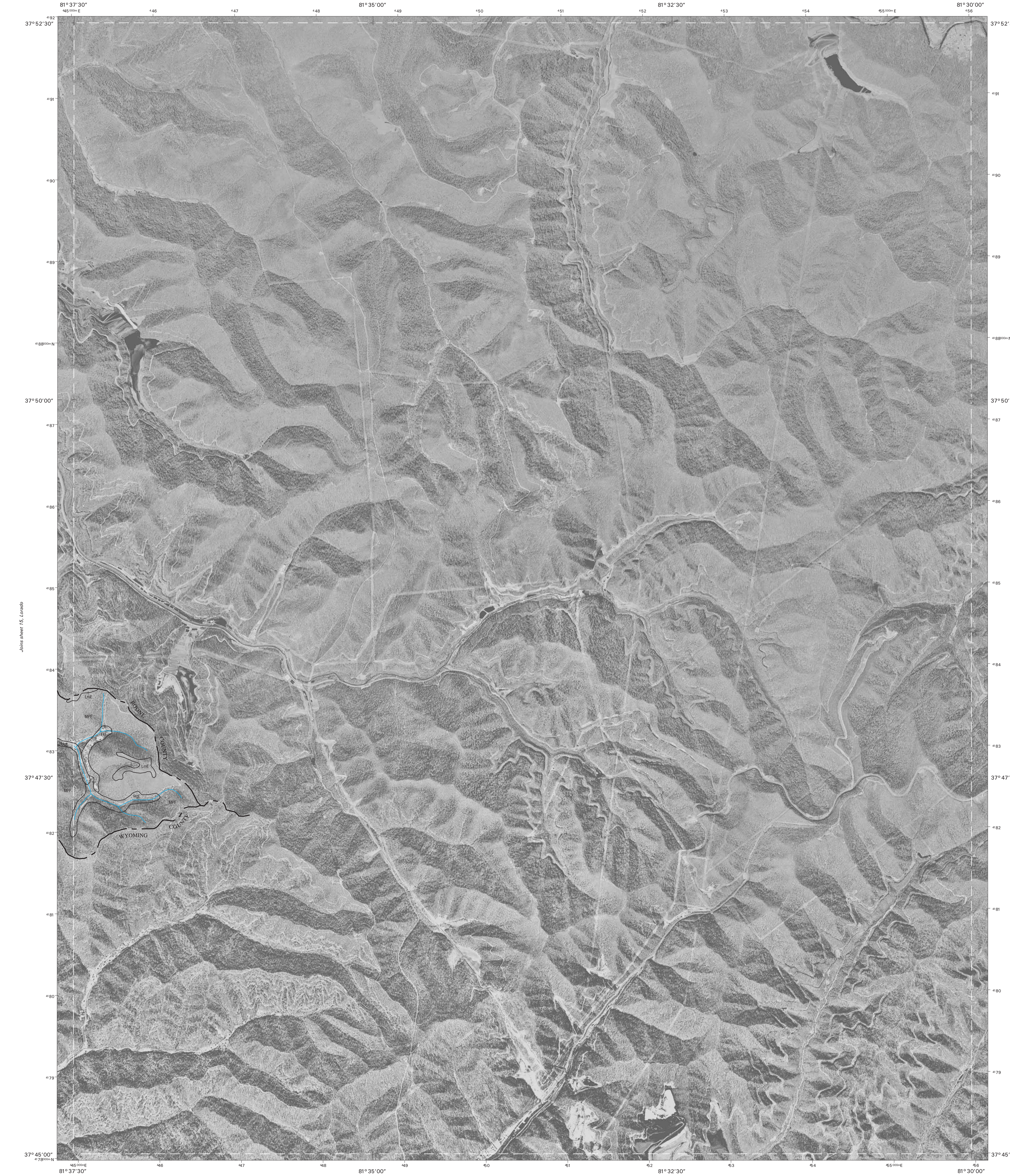

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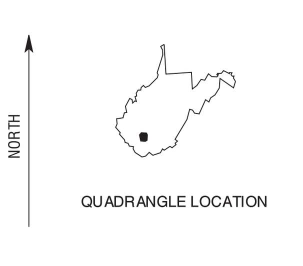
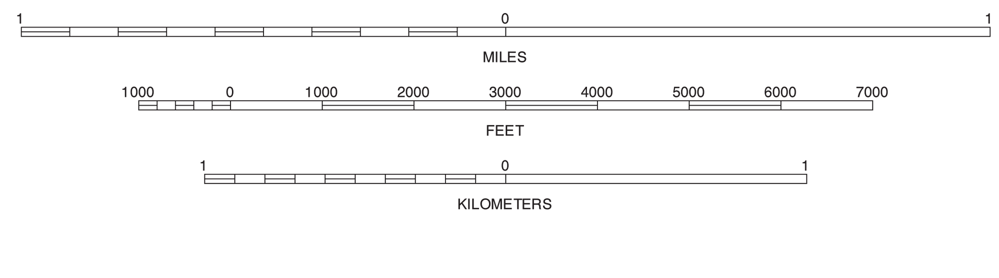
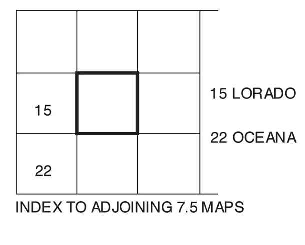


QUADRANGLE LOCATION

SCALE 1:24000





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PILOT KNOB, WEST VIRGINIA

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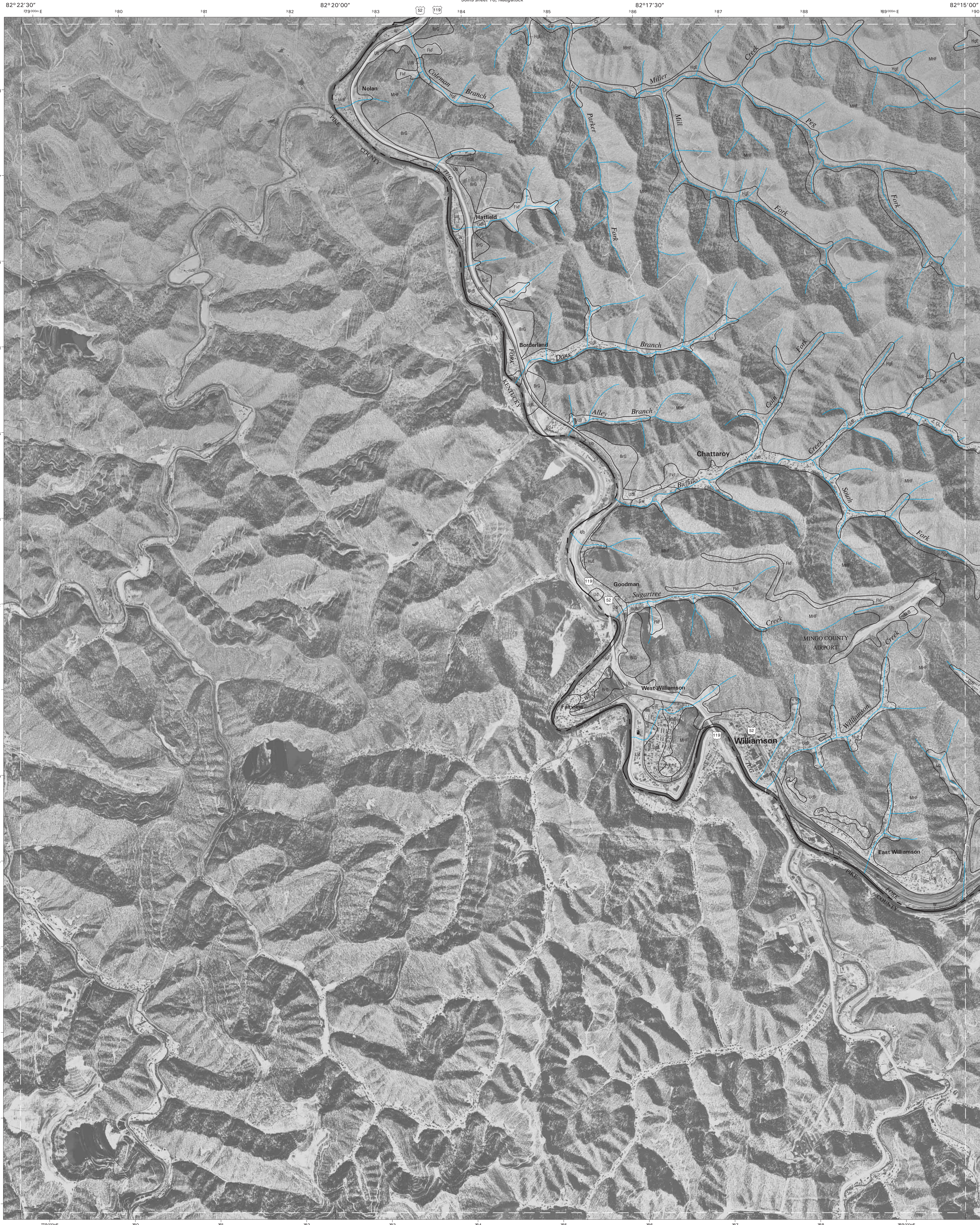
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
WILLIAMSON QUADRANGLE
SHEET NUMBER 17 OF 26



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

9	10	11
		18
		23

9 KERMIT
10 NAUGATUCK
11 MYRTLE
18 DELBARTON
23 MATEWAN

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WILLIAMSON, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 17 OF 26

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UNITED STATES
DEPARTMENT OF AGRICULTURE
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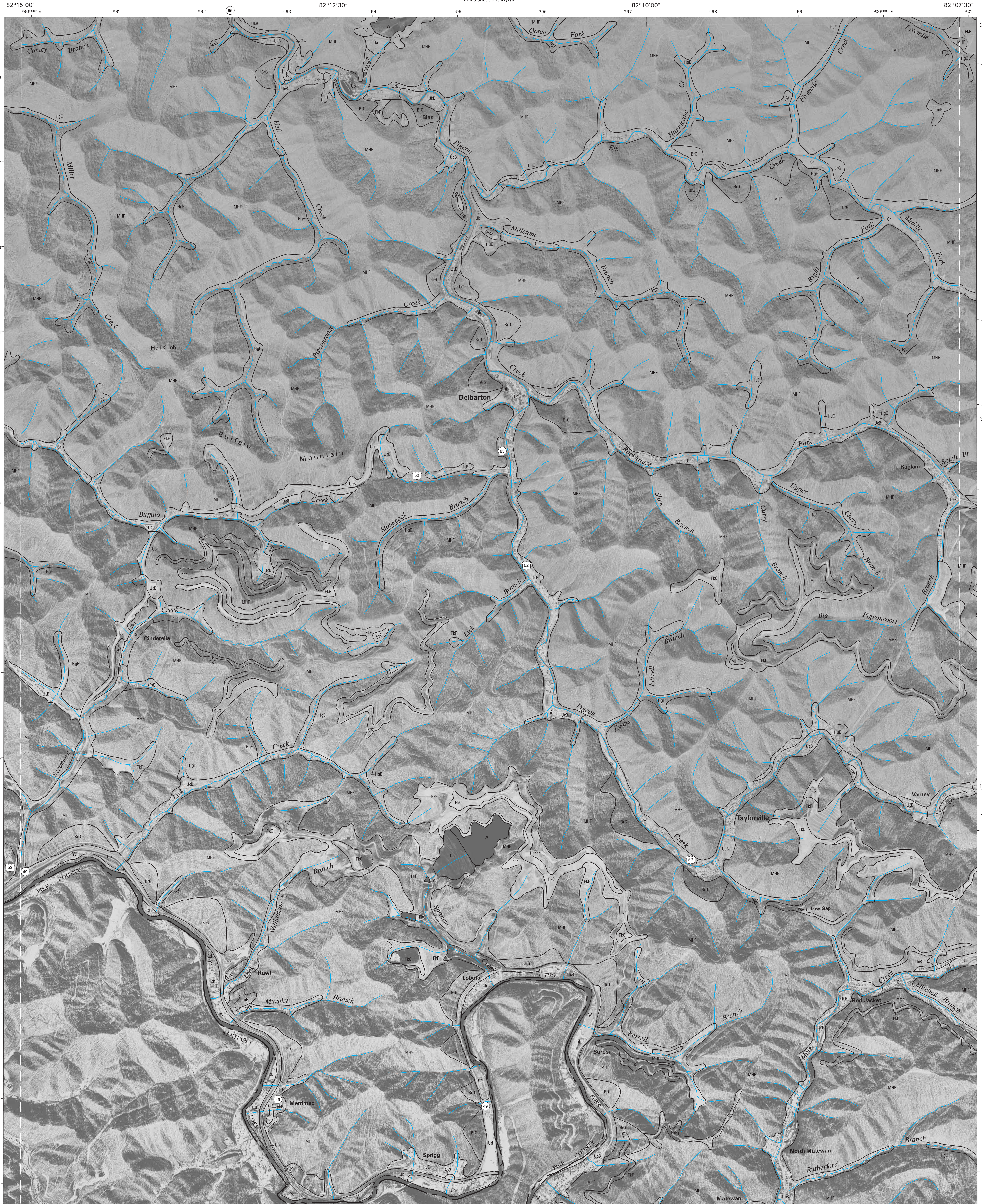
LOGAN AND MINGO COUNTIES, WEST VIRGINIA
DELBARTON QUADRANGLE
SHEET NUMBER 18 OF 26

Joins sheet 10, Naugatuck

Joins sheet 11, Myrtle

Joins sheet 12, Holden



Joins sheet 17, Williamson

Joins sheet 19, Barnabus

Joins sheet 23, Matewan

Joins sheet 24, Majestic

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

10	11	12
17		19
	23	24

10 NAUGATUCK
11 MYRTLE
12 HOLDEN
17 WILLIAMSON
19 BARNABUS
23 MATEWAN
24 MAJESTIC

INDEX TO ADJOINING 7.5 MAPS

DELBARTON, WEST VIRGINIA
7.5 MINUTE SERIES
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UNITED STATES
DEPARTMENT OF AGRICULTURE
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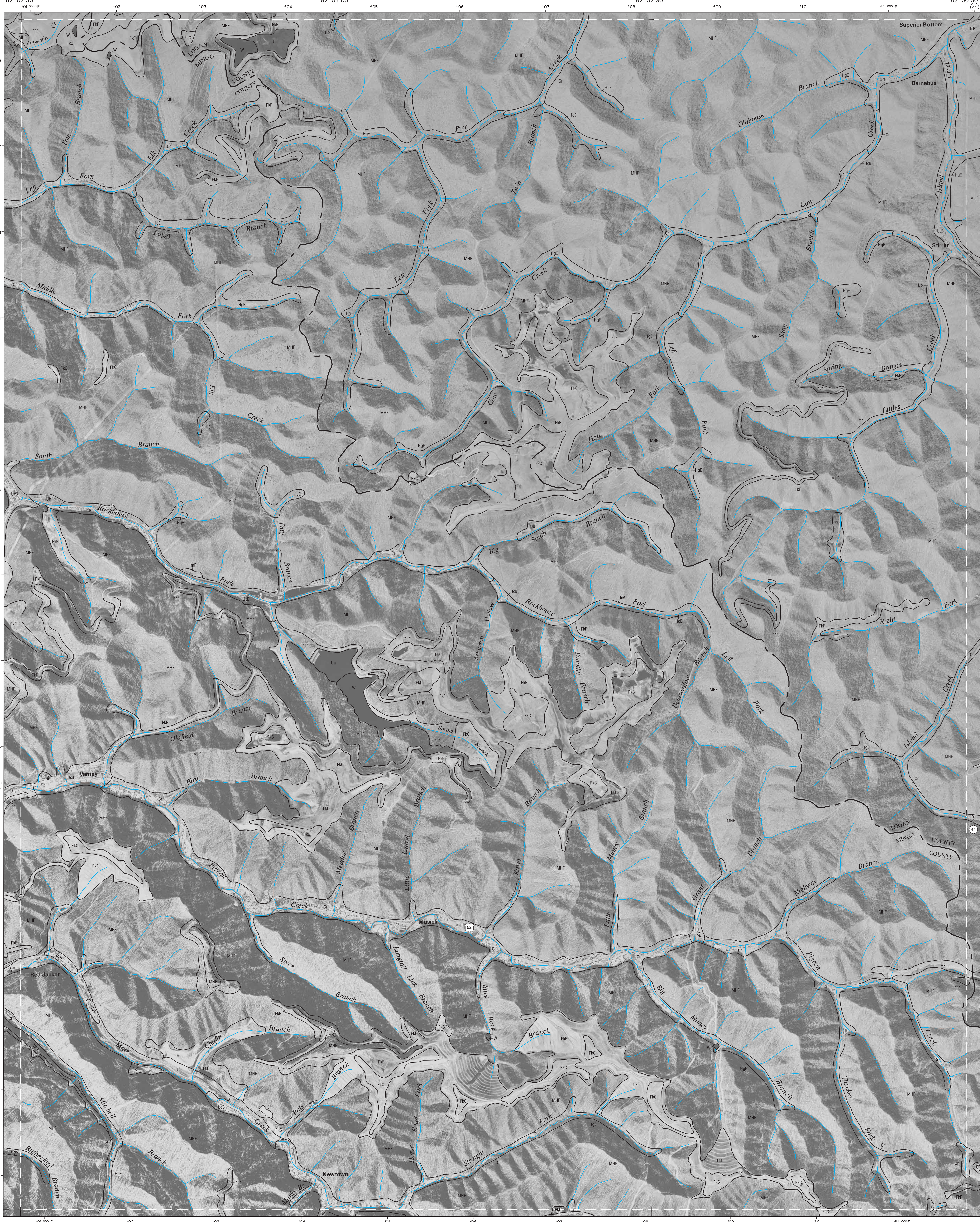
LOGAN AND MINGO COUNTIES, WEST VIRGINIA
BARNABUS QUADRANGLE
SHEET NUMBER 19 OF 26

Joins sheet 11, Myrtle

Joins sheet 12, Holden

Joins sheet 13, Logan



Joins sheet 18, Delbarton

Joins sheet 20, Man

Joins sheet 23, Matewan

Joins sheet 24, Majestic

Joins sheet 25, Wharncliffe

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

11	12	13
18		20
23	24	25

11 MYRTLE
12 HOLDEN
13 LOGAN
18 DELBARTON
20 MAN
23 MATEWAN
24 MAJESTIC
25 WHARNCLIFFE

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BARNABUS, WEST VIRGINIA
7.5 MINUTE SERIES
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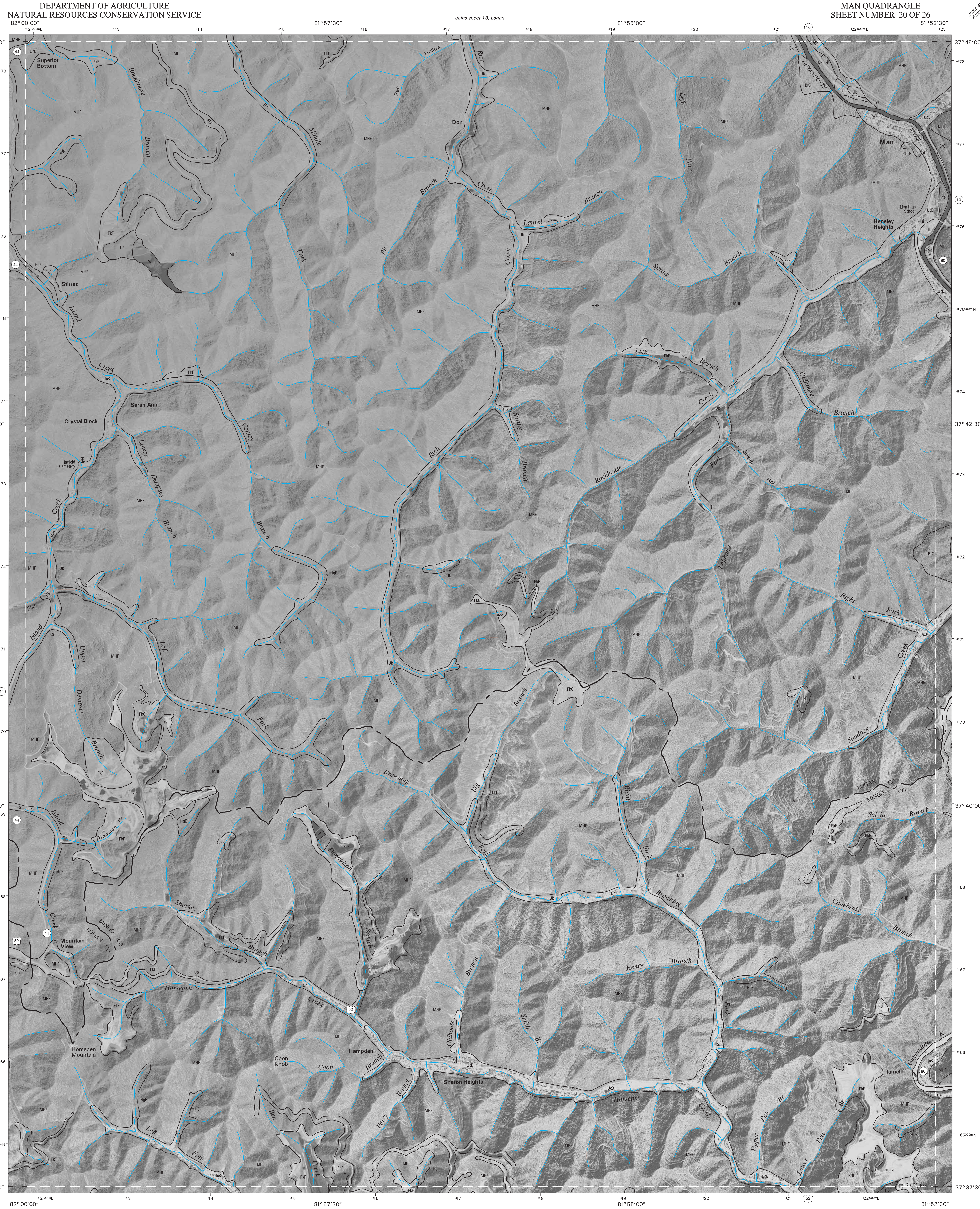
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
MAN QUADRANGLE
SHEET NUMBER 20 OF 26



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1000-meter ticks: Universal Transverse Mercator, zone 17.
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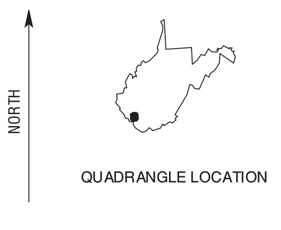

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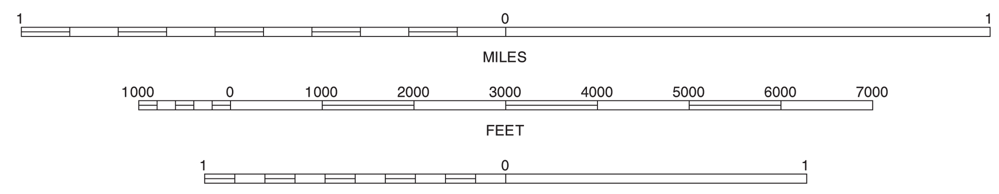

12	13	14
19		21
24	25	26

12 HOLDEN
13 LOGAN
14 AMHERSTDALE
19 BARNABUS
21 MALLORY
24 MAJESTIC
25 WHARNCLIFFE
26 GILBERT

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MAN, WEST VIRGINIA
7.5 MINUTE SERIES
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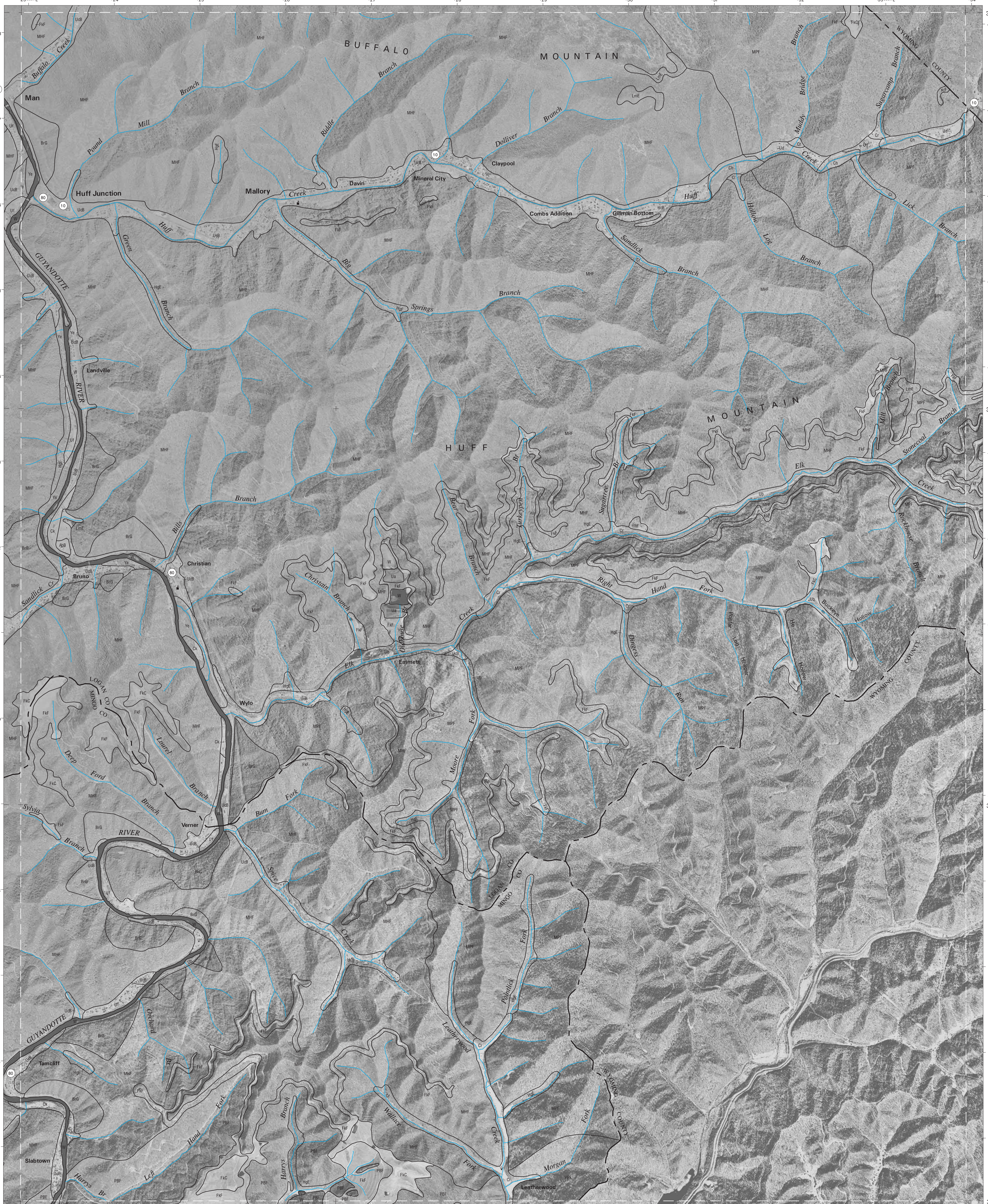
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
MALLORY QUADRANGLE
SHEET NUMBER 21 OF 26



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and the West Virginia Agricultural Experiment Station.
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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

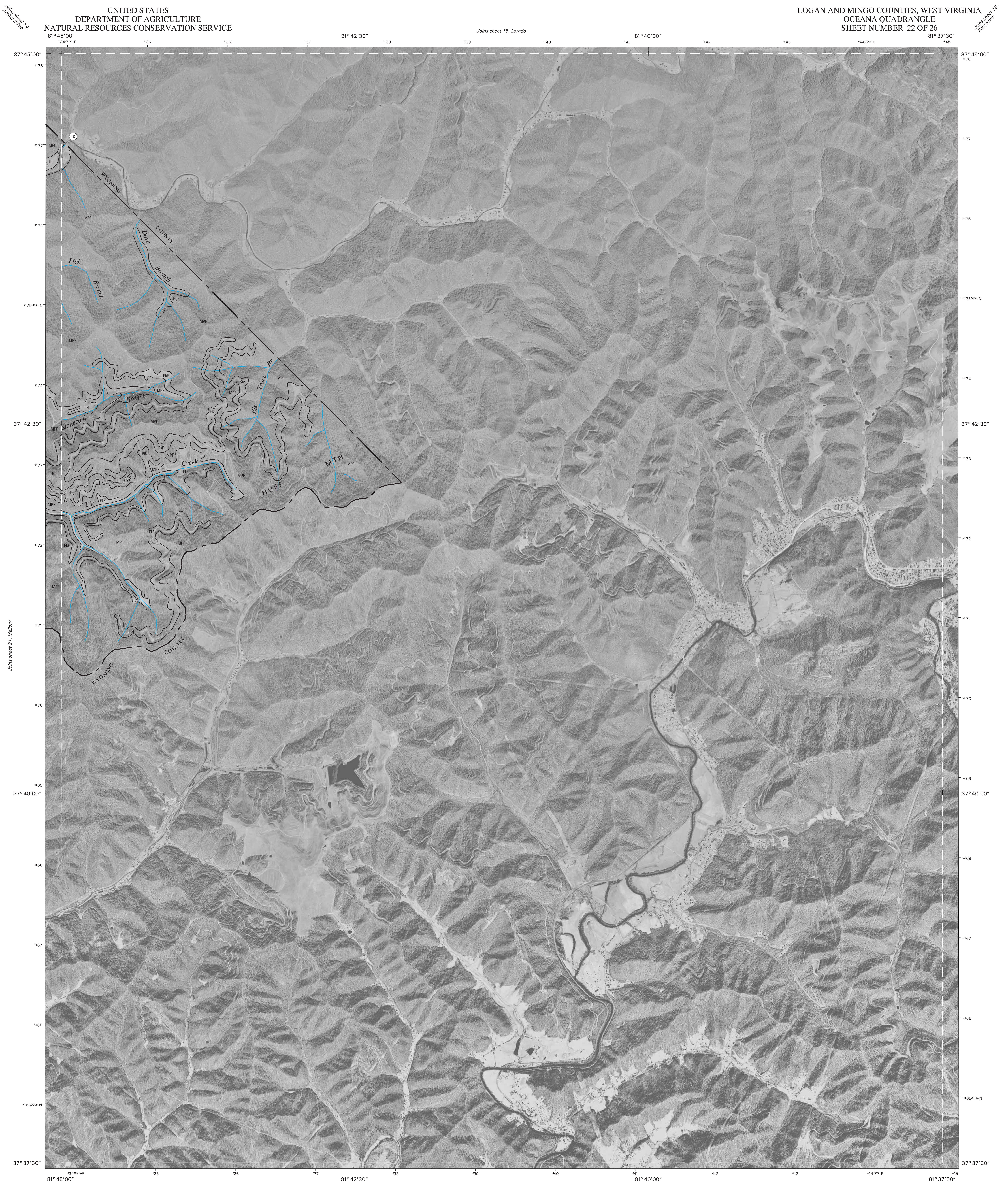
13	14	15
20		22
25	26	

13 LOGAN
14 AMHERSTDALE
15 LORADO
20 MAN
22 OCEANA
25 WHARNCLIFFE
26 GILBERT

INDEX TO ADJOINING 7.5 MAPS

MALLORY, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 21 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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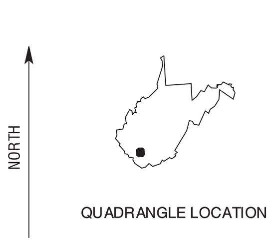
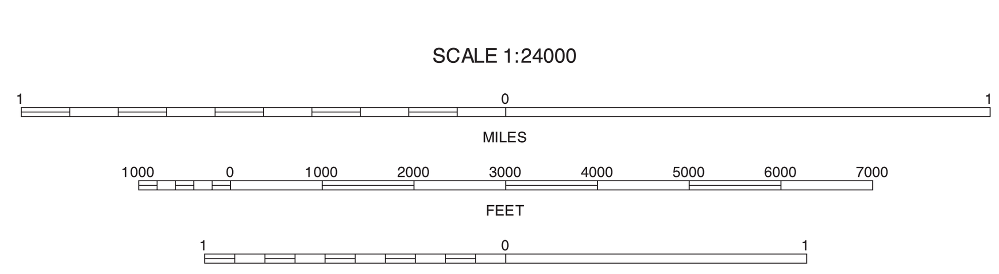
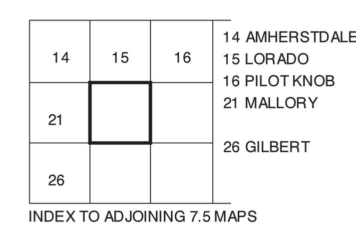






OCEANA, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 22 OF 26

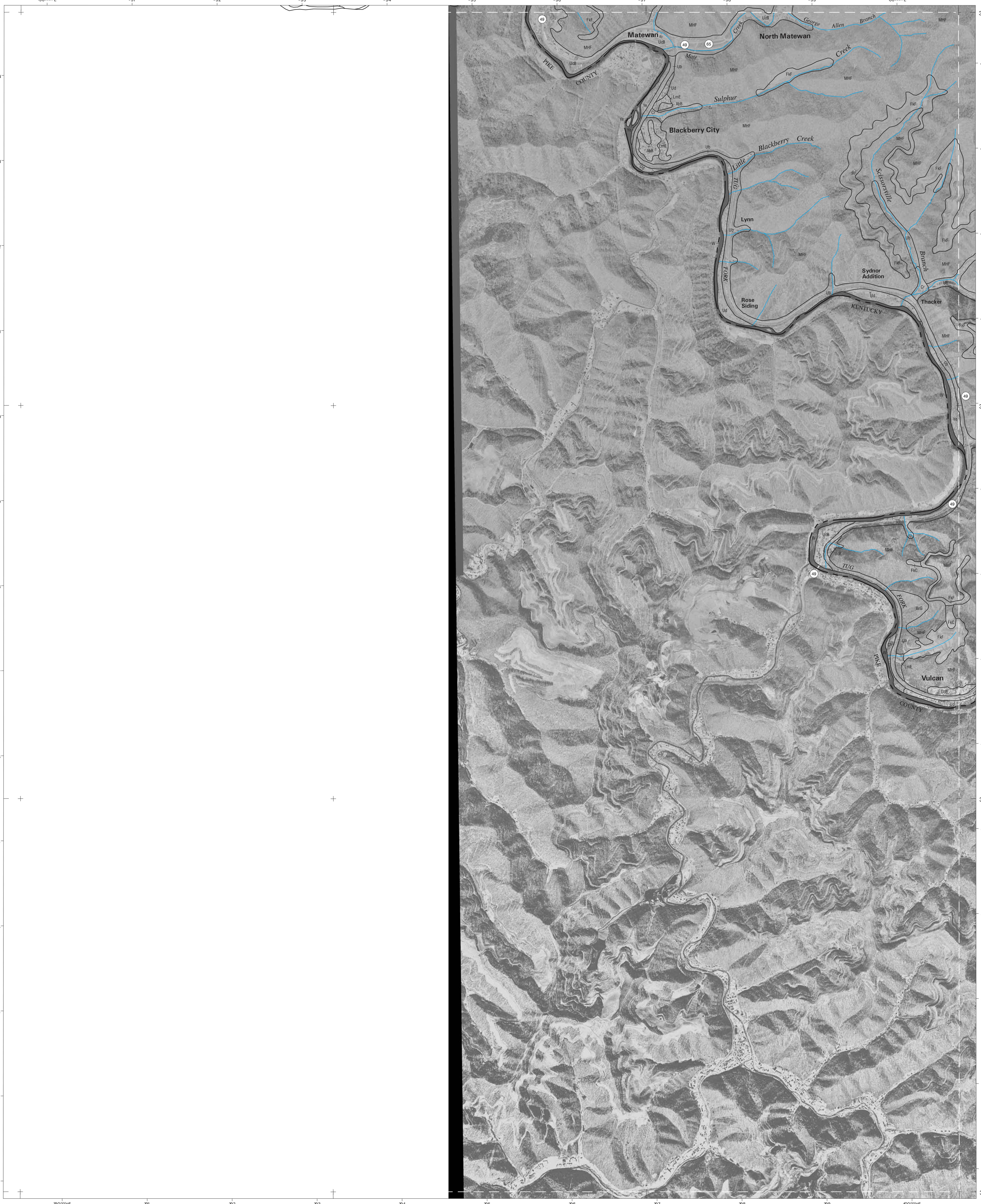
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 17, Williamson

Joins sheet 18, Delbarton

Joins sheet 19, Barnabus

Joins sheet 24, Majestic



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

17	18	19
		24

17 WILLIAMSON
18 DELBARTON
19 BARNABUS
24 MAJESTIC

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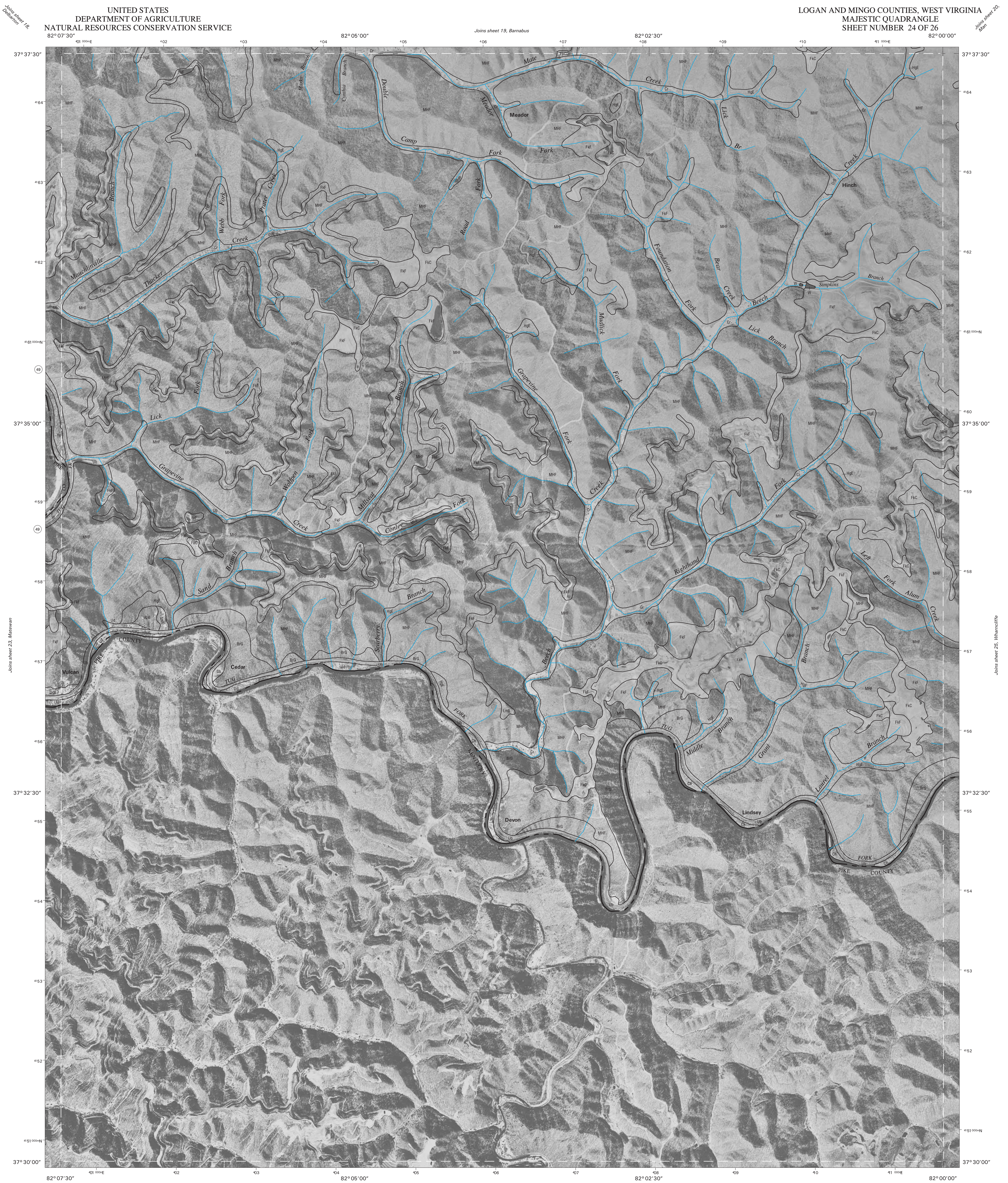
MATEWAN, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 23 OF 26

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
MAJESTIC QUADRANGLE
SHEET NUMBER 24 OF 26



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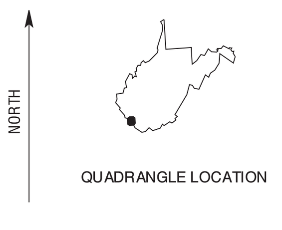

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

18	19	20
23		25

18 DELBARTON
19 BARNABUS
20 MAN
23 MATEWAN
25 WHARNCLIFFE

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MAJESTIC, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 24 OF 26

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UNITED STATES
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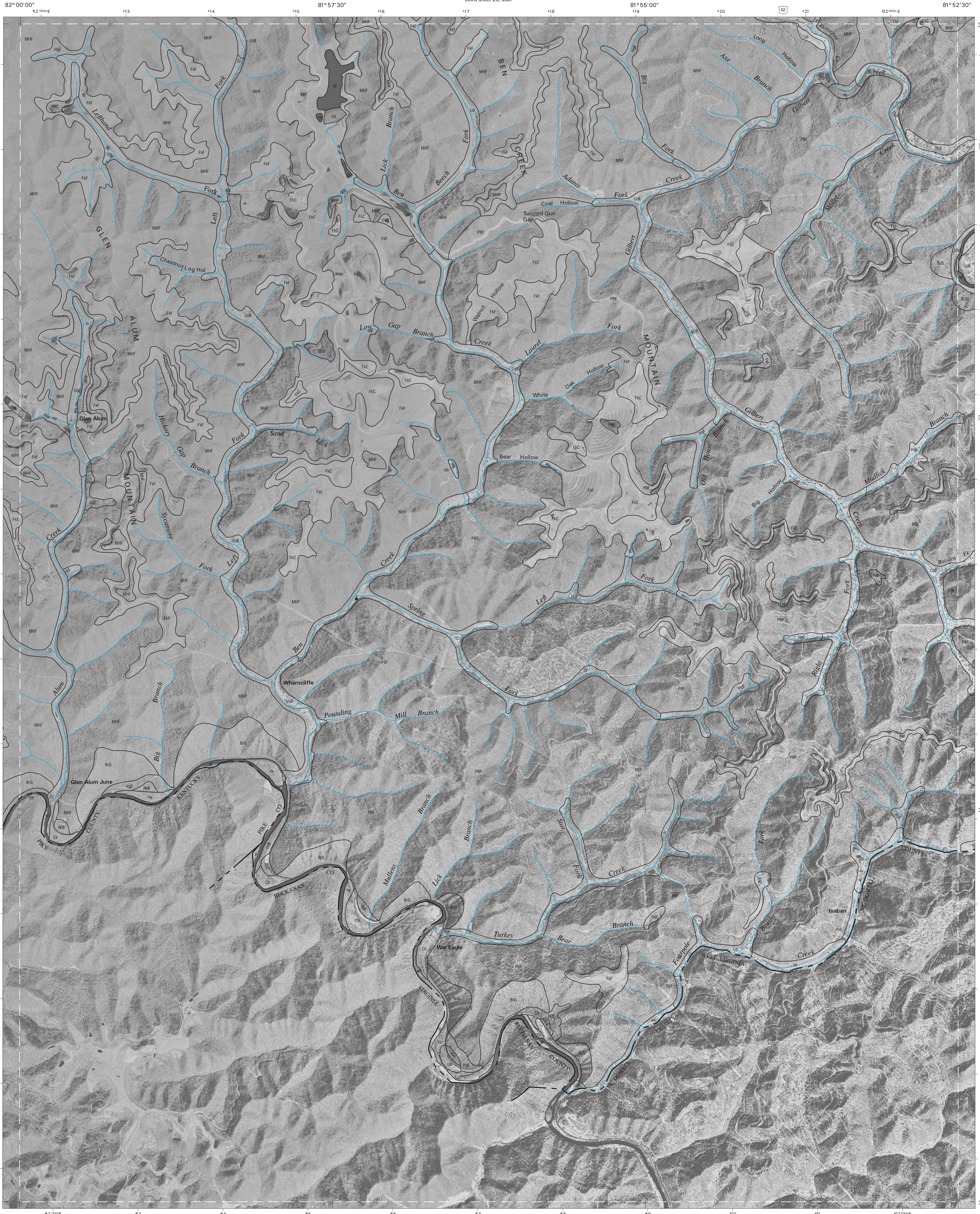
NATURAL RESOURCES CONSERVATION SERVICE

LOGAN AND MINGO COUNTIES, WEST VIRGINIA
WHARNCLIFFE QUADRANGLE
SHEET NUMBER 25 OF 26



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

19	20	21
24		26

19 BARNABUS
20 MAN
21 MALLORY
24 MAJESTIC
26 GILBERT

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WHARNCLIFFE, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 25 OF 26

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UNITED STATES
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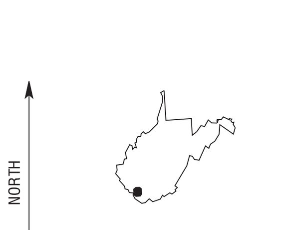
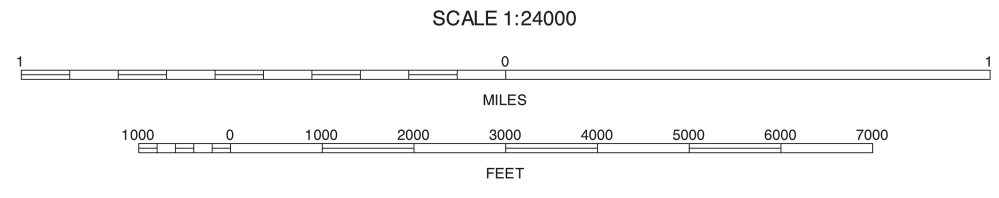
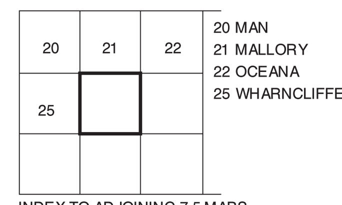


SCALE 1:24000





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GILBERT, WEST VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 26 OF 26

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